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INDIANA STATE BOARD OF HEALTH

ELEVENTH ANNUAL REPORT

OF THE

CHEMICAL DIVISION

OF THE

LABORATORY OF HYGIENE

FOR THE
YEAR ENDING SEPTEMBER 30, 1916

INDIANA STATE BOARD OF HEALTH

ELEVENTH ANNUAL REPORT

OF THE

Chemical Division

OF THE

Laboratory of Hygiene

FOR THE

YEAR ENDING SEPTEMBER 30, 1916

FORT WAYNE PRINTING COMPANY
CONTRACTORS FOR STATE PRINTING AND BINDING
1917

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ELEVENTH ANNUAL REPORT OF THE CHEMICAL DEPARTMENT OF THE LABORATORY OF HYGIENE.

H. E. BARNARD, PH.D.

The tabulations and summaries of the work done in the Chemical Division of the Laboratory of Hygiene of the State Board of Health as outlined in this, the eleventh annual report show little variation from those of other years. The larger field now occupied by the several departments does not limit, as once, the work of the chemists to the enforcement of the food and drugs act. The laboratories are now, more than ever before, devoted to the general work of the State Board of Health and food and drug control is but an incident to their operation.

The special studies of the public and private water supplies of the state are herein given at length in the belief that the data will be of interest to sanitarians and engineers as well as an evidence of the necessity for the work and an argument for its wider development. The continued interest of health officers and public officials in eliminating polluted water supplies, approving the safety of much used sources and devising means for the purification of streams and the better disposal of sewage is gratifying and is accepted as proof that these problems are today recognized as vital in the protection of the public health.

As in other years our great appreciation of the support given our work by the people and press of the state is gratefully acknowledged. The enforcement of the food and drug laws and the regulatory sanitary measures which now surround the production and sale of food succeeds when those concerned appreciate the motive back of the law, and fails when the officials are concerned only in arraigning offenders and in imposing penalties. The educational work done by the inspector in the field produces more lasting results than can ever be secured in the court room.

The department has been fortunate in retaining with but little change its corps of chemists, clerks and inspectors and credits no small part of its success to this fact.

RESULTS OF ANALYSIS OF FOOD SAMPLES.

Thirteen hundred and eighty-five samples of food purchased by inspectors or sent in by health officers or interested consumers were examined at the laboratory during the year. Ten hundred and sixty-six of these samples were legal and 319 or 23.1% were listed as illegal, either because they contained ingredients prohibited by the statute, such as chemical preservatives or bulk making cereals, or because they fell below the standard of normal composition or were misbranded or otherwise mislabeled. Many of the milk samples were reported as illegal, not because they were skimmed or watered, but because they contained visible dirt, an evidence of impurity of far greater import than dilution or the theft of butter fat. The percentage of adulteration factor is further swelled by the inclusion of such samples as cider, of which 18 out of 20 were listed as illegal because of the high alcohol content, and of vinegar, of which 24 of 44 samples fell below the standard, in most cases because of immaturity rather than of intentional fraud.

If it were possible or advisable to tabulate the results of analysis of food samples into two classes, one of which would show naturally the farm made food stuffs, and the other the manufactured products gathered from all parts of the world and sold in package form, it would be evident that the adulteration was confined almost entirely to the first class. The bulk of the food supply, which consists of cereals, fruits and vegetables, canned goods, sugar syrups, spices and accessories would show no adulteration and the unsatisfactory samples would be found in the lists of goods produced by the local butcher in his back room and by the farmer who did not know how to work and who had no means of determining whether or not his products were standard. It is a difficult matter for the farmer to determine when his vinegar is matured, how much moisture is present in his butter, whether or not the condiments and spices he uses in the preparation of home-made sausage and meat loaves are pure or loaded with chemicals.

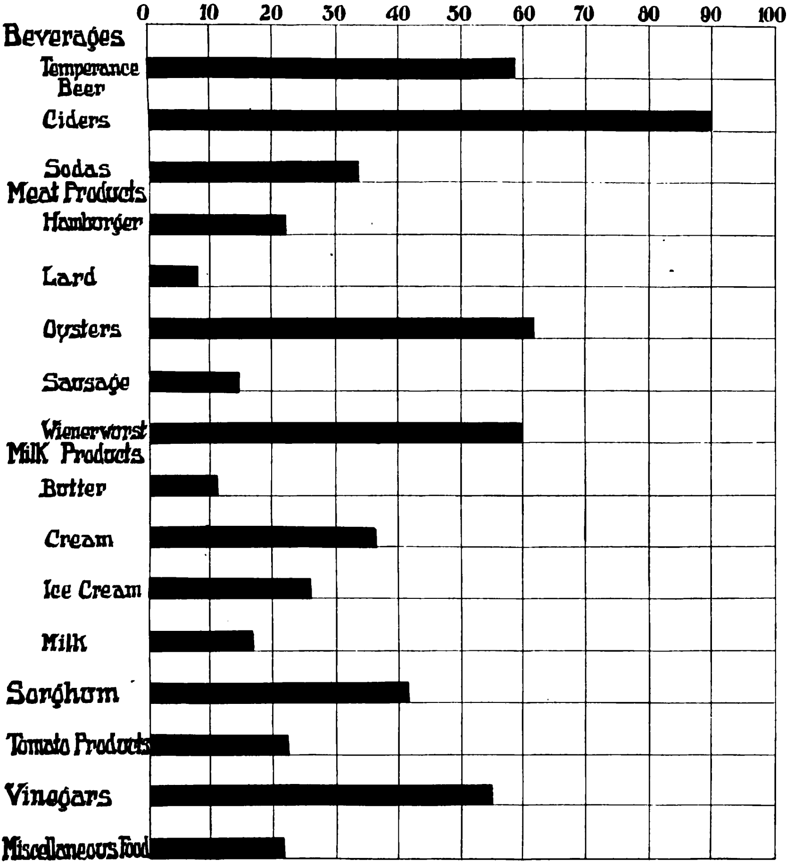
The work of the chemical laboratory would be wrongly directed if it were concerned only with such violations of the law, definite though they may be. Special reference to the various forms of adulteration found in various classes of food will be made under the discussion of such foods in the tables following:

RESULTS OF ANALYSIS OF FOOD SAMPLES FOR THE YEAR ENDING OCTOBER 1, 1915, TO OCTOBER 1, 1916.

Article.	Legal.	Illegal.	Total.	Per Cent. Adulteration.
Beverages—				
Beers	14	0	14	
Temperance Beers	25	23	48	47.9
Cider	2	18	20	90.0
Sodas	8	4	12	33.3
Wine	6		6	
Bread, Gluten	2	2	4	50.0
Extracts	3		3	
Flour	5	4	9	44.5
Grape Fruit	7	9	16	56.2
Honey	2		2	
Jellies	11	1	12	8.3
Maple Syrup	8		8	
Sorghum Syrups	7	5	12	41.6
Tomato Products	21	6	27	22.2
Vinegars	20	24	44	54.5
Meat Products—				
Lard	13	1	14	7.1
Oysters	8	13	21	62.0
Hamburger	125	37	162	22.8
Sausage	148	27	175	15.4
Weinerwurst	2	3	5	60.0
Milk Products—				
Butter	77	10	87	11.6
Cream	14	8	22	36.3
Ice Cream	89	32	121	26.4
Milk	377	75	452	16.6
Milk, Breast	22		22	
Milk, Condensed	7	6	13	21.7
Oleomargine	4		4	
Miscellaneous Food samples	39	11	50	22.0
Total	1,066	319	1,385	23.1

PERCENTAGE of ADULTERATION of FOODS ANALYZED in INDIANA

1916



REPORT FROM THE FOOD LABORATORY.

DAIRY PRODUCTS.

MILK.

Three hundred and seventy-seven samples of milk sent in by the inspectors or health officers conformed to the standards established by law. Seventy-five or 16.6% were listed as illegal. Forty of the 75 samples were classed as illegal because they contained visible dirt. Thirty-two samples contained less than the required 3.25% of butter fat. A number of samples were deliberately watered but others were apparently produced by herds or individual cows bred to produce volume rather than quality.

MILKS—ILLEGAL.

Laboratory No.	Manufacturer or Retailer	Per Cent of Fat.	Remarks.
30041	Sent in from Richmond..........	4.7	Small amount visible dirt.
30042	Sent in from Richmond..........	5.7	Small amount visible dirt.
30043	Sent in from Richmond..........	3.0	Low in fat, added water.
30154	Sam Hohenberg, Greensburg.....	3.4	Slightly dirty.
30156	Koldykes Pure Milk, Marion....	2.7	Low in fat, visible dirt present.
30159	Christ Horstman, Greensburg....	4.0	Slight amount visible dirt.
30210	J. F. Workman, Kokomo........	3.3	Small amount visible dirt.
30234	Sent in from Syracuse...........	3.3	Formaldehyde present.
30236	Sent in from Syracuse...........	3.8	Formaldehyde present.
30237	Sent in from Syracuse...........	2.8	Low in fat.
30212	McCarty & Crawford, Martinsville.	2.9	Low in fat.
30235	Marion Jones, Anderson.........	3.0	Low in butterfat.
30259	F. L. Kreutz, Mishawaka........	5.3	Visible dirt present.
30279	Vincennes Milk Co., Vincennes...	....	Very dirty.
30341	J. W. Morrow, Madison.........	2.7	Low in fat, visible dirt.
30389	Sent in from Muncie............	2.0	Low in fat.
30442	H. L. Jemison, Shelbyville.......	....	Much visible dirt.
30452	Sent in from Richmond..........	3.4	Small amount visible dirt.
30453	Sent in from Richmond..........	5.2	Small amount visible dirt.
30454	Sent in from Richmond..........	3.9	Small amount visible dirt.
30455	Sent in from Richmond..........	4.1	Small amount visible dirt.
30458	Sent in from Richmond..........	2.0	Low in fat.
30459	Sent in from Richmond..........	2.5	Visible dirt present.
30485	Wm. Duggan, Rushville..........	4.1	Much visible dirt present.
30486	Fred Cochran, Rushville.........	3.4	Much visible dirt present.
30507	A Van de Walle, Mishawaka.....	4.3	Slight amount visible dirt.
30525	J. M. & S. A. Thomas, Laporte..	3.1	Low in fat.
30528	A. Nowatzke, Michigan City.....	4.0	Slightly dirty.
30558	Sent in from Kokomo...........	2.6	Added water present.
30559	Roy Miller, Shelbyville..........	4.7	Visible dirt present.
30560	Roy Miller, Shelbyville..........	4.2	Much visible dirt present.
30561	H. W. Sampson, Shelbyville.....	3.8	Visible dirt present.
30562	James Shields, Shelbyville.......	4.4	Visible dirt present.
30586	Fremont Davis, Columbus.......	6.1	Small amount visible dirt.
30587	Orval Horning, Columbus.......	4.8	Slight amount visible dirt.
30590	Peter Gross, Syracuse..........	2.6	Low in fat.
30615	Sent in from Terre Haute.......	4.0	Slight amount visible dirt.
30643	Sent in from Terre Haute.......	4.8	Very much visible dirt.
30691	Peter Gross, Syracuse...........	3.0	Low in fat.
30697	Sent in from Terre Haute.......	4.8	Very much visible dirt.
30769	Sent in from Lafayette.........	2.4	Low in fat.
30795	Philbeck Cafe, Terre Haute......	2.4	Low in fat.
30818	Sent in from Terre Haute.......	3.2	Low in fat.
30819	Sent in from Terre Haute.......	3.8	Visible dirt present.
30820	Sent in from Terre Haute.......	3.2	Low in fat.
30839	Sent in from Indianapolis........	2.9	Low in fat, added water.

MILKS—ILLEGAL—Continued.

Laboratory No.	Manufacturer or Retailer.	Per Cent of Fat.	Remarks.
30862	Thos. Shields, Evansville........	3.2	Low in fat, added water.
30863	Thos. Shields, Evansville........	2.4	Low in fat, added water.
30889	Boyd Bros., Muncie............	3.8	Visible dirt present.
30890	Solon Fry, Muncie.............	3.1	Low in fat.
30891	Walter Catron, Muncie..........	2.0	Low in fat, added water.
30892	Walter Catron, Muncie..........	1.9	Low in fat, added water.
30893	G. S. Bair, Marion.............	2.6	Low in fat.
30905	G. B. Deaton, Muncie..........	4.4	Visible dirt present.
30909	E. S. Darter, Marion...........	3.3	Small amount dirt present.
30910	Joe Etters, Marion.............	3.3	Small amount dirt present.
30912	L. F. Shively, Terre Haute......	2.8	Low in fat.
30919	Walter Catron, Muncie.........	....	Sample very dirty.
30920	Walter Catron, Muncie.........	....	Sample very dirty.
30921	Walter Catron, Muncie.........	....	Sample very dirty.
30936	Sent in from Terre Haute.......	3.0	Low in fat, added water.
30939	Sent in from Terre Haute.......	3.0	Low in fat, added water.
30937	Sent in from Terre Haute.......	3.1	Low in fat, added water.
30938	Sent in from Terre Haute.......	3.0	Low in fat.
30959	Henry Hoffman, Anderson......	3.8	Small amount dirt present.
30960	R. G. Parker, Anderson..........	4.5	Small amount visible dirt.
31014	M. Voglesang & Sons, Rockport..	4.4	Added water present.
31015	M. Voglesang & Sons, Rockport..	4.45	Added water present.
31038	I. P. King, Terre Haute..........	2.7	Low in fat.
31040	Gillett Bros., Terre Haute......	4.3	Much visible dirt present.
31045	A. A. Tripp, North Vernon......	2.6	Low in fat.
31064	John Swissler, Richmond........	2.6	Low in fat.
31065	James Pontus, Richmond........	2.6	Low in fat.
31066	Lula Pontils, Richmond.........	....	Sample very dirty.
31067	Lou Strathaus, Richmond.......	2.5	Low in fat.

CONDENSED MILK.

But few samples of condensed milk have been analyzed and then only in response to requests from interested parties. Condensed milk is now made under conditions which insure a uniformity of product and a strict adherence to established standards.

CONDENSED MILK.

Laboratory No.	Manufacturer or Retailer.	Per Cent of Fat.	Total Solids.	Remarks.
30302	Sheridan Condensed Milk Co., Sheridan.......	9.24	27.69	Legal.
30303	Sheridan Condensed Milk Co., Sheridan.......	9.24	27.22	Legal.
30304	Sheridan Condensed Milk Co., Sheridan.......	9.31	27.00	Legal.
30998	Indiana Condensed Milk Co., Sheridan........	6.90	26.55	Illegal.
30999	Indiana Condensed Milk Co., Sheridan........	6.90	26.18	Illegal.
31000	Indiana Condensed Milk Co., Sheridan........	7.20	25.39	Illegal.
31001	Indiana Condensed Milk Co., Sheridan........	7.20	26.20	Illegal.
31002	Indiana Condensed Milk Co., Sheridan........	7.20	26.12	Illegal.
31003	Indiana Condensed Milk Co., Sheridan........	7.20	26.20	Legal.
31004	Indiana Condensed Milk Co., Sheridan........	8.70	27.87	Legal.
31005	Indiana Condensed Milk Co., Sheridan........	8.70	27.70	Legal.
31006	Indiana Condensed Milk Co., Sheridan........	9.00	27.60	Legal.
31007	Indiana Condensed Milk Co., Sheridan........	9.30	27.62	Legal.

BREAST MILK.

The analysis of 22 samples of breast milk is recorded. This work was not done because of any evident violation of the pure food law, but in the hopes that the data supplied might be of some value to the physician or nurse.

BREAST MILK.

Laboratory No.	Sent in by	Per Cent Fat.	Per Cent of Protein N X 6.25	Remarks.
30028	Dr. E. W. Layman, Terre Haute	2.10	1.75	
30029	Dr. H. I. Berger, Indianapolis	4.20	2.03	Sugar 6.05.
30034	Dr. H. I. Berger, Indianapolis	5.90	....	
30217	Harry Anderson, Indianapolis	3.70	1.35	Carbohydrates 6.5
30219	Dr. L. Maxwell, Indianapolis	3.10	1.47	
30229	Dr. Jack Jones, Indianapolis	2.20	1.75	Carbohydrates 6.6.
30234	Dr. C. L. Rowland, Lafayette	1.60	1.19	
30264	Dr. H. S. Hatch, Madison	2.80	1.36	
30329	Dr. Mable Hirsch, Marion	2.10	.98	
30344	J. P. Weatherspoon, Princeton	1.70	1.05	Carbohdyrates 6.2.
30357	Dr. Henchman, Indianapolis	2.60	....	
30442	H. M. Ibison, Indianapolis	3.30	....	
30535	Mrs. Robinson, Crawfordsville	1.70	1.12	
30555	Mrs. C. W. Wilson, Indianapolis	4.40	2.54	
30617	Mrs. T. J. Kizer, Indianapolis	7.90	2.45	
30706	Mrs. T. J. Kizer, Indianapolis	7.90	2.45	
30985	C. E. Cogswell, Paoli	1.80	1.08	
31016	Dr. J. H. Morrison, Hartsville	3.10	1.14	
31074	J. L. Hobson, Hartford City	2.65	2.27	
31083	Mrs. Horsley, Indianapolis	1.40	1.36	
31143	E. C. Denny, Milton	3.76	1 29	
31176	G. W. Parrish, Indianapolis	2.50	1.12	

BUTTER.

Of the 77 butter samples analyzed but 10 or 11.6% were illegal. In every case the illegal samples contained a slight excess of water. The maximum moisture content recorded is 17.66 percent.

BUTTER—LEGAL.

Laboratory No.	Retailer.	Collected.	Butyro 40° C.	Reichert-Meissl Number.	Moisture.
30030	McCready Milk Co	Indianapolis	....	....	10.9
30162	Indiana Ice & Dairy	Anderson	....	....	11.70
30163	Alexandria Creamery	Alexandria	....	....	11.30
30164	White River Creamery	Muncie	....	....	12.65
30165	Western Ohio Creamery	Richmond	....	....	13.60
30176	Schlosser Bros	Plymouth	....	....	13.55
30200	George Freese Sons	Napanee	44.5	26.6	....
30216	Sent in from	Terre Haute	41.85	2.98	....
30233	J. W. Whitlock & Co	Rising Sun	42.10	29.60	....
30244	Sent in from	Jeffersonville	44.6	26.2	....
30260	Carter & Sons	Noblesville	....	....	15.10
30261	Robert Mock Co	Noblesville	....	....	13.40
30262	A. D. Couden	Noblesville	....	....	14.65
30263	George Hayes	Noblesville	....	....	14.72
30264	Crystal Springs Co	Osceola	44.6	27.4	....
30330	Schlosser Bros	Plymouth	....	....	13.82
30331	Schlosser Bros	Plymouth	....	....	12.65
30332	Scholsser Bros	Plymouth	....	....	12.15
30333	Schlosser Bros	Plymouth	....	....	14.10
30334	Schlosser Bros	Plymouth	....	....	14.76
30335	Schlosser Bros	Plymouth	....	....	15.30
30336	Schlosser Bros	Plymouth	....	....	13.41
30337	Schlosser Bros	Plymouth	....	....	14.31
30338	Schlosser Bros	Plymouth	....	....	11.92
30339	Schlosser Bros	Plymouth	....	....	12.10

BUTTER—LEGAL—Continued.

Laboratory No.	Retailer.	Collected	Butyro 40° C.	Reichert-Meissl Number.	Moisture.
30340	Schlosser Bros	Plymouth			13.82
30341	Schlosser Bros	Plymouth			13.51
30342	Schlosser Bros	Plymouth			13.87
30343	Schlosser Bros	Plymouth			15.10
30344	Schlosser Bros	Plymouth			13.80
30345	Schlosser Bros	Plymouth			12.72
30346	Schlosser Bros	Plymouth			13.15
30347	Schlosser Bros	Plymouth			14.27
30348	Schlosser Bros	Plymouth			13.76
30349	Sclhosser Bros	Plymouth			14.70
30350	Sent in from	Muncie	42.7		12.40
30360	Sent in from	Muncie	42.7		14.31
30370	Scholsser Bros	Plymouth			13.75
30371	Schlosser Bros	Plymouth			14.68
30372	Scholsser Bros	Plymouth			14.60
30373	Schlosser Bros	Plymouth			14.51
30374	Schlosser Bros	Plymouth			13.91
30375	Schlosser Bros	Plymouth			15.25
30376	Schlosser Bros	Plymouth			14.85
30377	Schlosser Bros	Plymouth			13.80
30378	Schlosser Bros	Plymouth			13.05
30379	Schlosser Bros	Plymouth			14.26
30388	Sent in from	Fort Wayne	44.2		
30429	Buehler Bros	Richmond	44.2	29.8	
30430	Sent in from	Elkhart	42.0	29.1	
30538	Sent in from	Indianapolis			16.01
30540	Schlosser Bros	Plymouth			15.40
30541	Schlosser Bros	Plymouth			15.72
30542	Schlosser Bros	Plymouth			15.15
30543	Schlosser Bros	Plymouth			14.50
30544	Schlosser Bros	Plymouth			15.80
30545	Schlosser Bros	Plymouth			15.71
30546	Schlosser Bros	Plymouth			15.82
30547	Schlosser Bros	Plymouth			16.00
30548	Scholsser Bros	Plymouth			15.60
30549	Schlosser Bros	Plymouth			15.56
30557	Wadley Co	Terre Haute			15.10
30593	Sent in from	Richmond	41.6	27.6	
30600	Wm. H. Black Company	Indianapolis			14.21
30601	Wm. H. Block Company	Indianapolis			13.70
30602	Wm. H. Block Compnay	Indianapolis			14.60
30802	Wm. H. Block Company	Indianapolis			15.12
30802a	Wm. H. Block Company	Indianapolis			14.80
30803	Wm. H. Block Company	Indianapolis			14.78
30803a	Wm. H. Block Company	Indianapolis			14.49
30847	White River Creamery Co	Muncie			14.83
30978	Schlosser Bros	Plymouth			15.32
30979	Scholsser Bros	Plymouth			16.00
30980	Schlosser Bros	Plymouth			15.95
30981	Schlosser Bros	Plymouth			15.85
30982	Schlosser Bros	Plymouth			15.80
30992	Sent in from	Elkhart	43.2	31.35	

BUTTER—ILLEGAL.

Laboratory No.	Retailer.	Collected.	Butyro 40° C.	Reichert-Meissl Number.	Moisture.
30365	Sent in from	Elwood	43.8	27.8	
30536	Sent in from	Indianapolis			17.66
30537	Sent in from	Indianapolis			16.75
30801	Wm. H. Block Co	Indianapolis			16.82
30804	Wm. H. Block Co	Indianapolis			16.37
30805	Wm. H. Block Co	Indianapolis			16.55
31099	Sent in from	Indianapolis	42.0	24.0	
31115	Wm. H. Block Co	Indianapolis			16.42

OLEOMARGARINE—LEGAL.

Laboratory No.	Sent in by	Collected.	Butyro 40° C	Reichert-Meissl Number.	Moisture.
30273	Dr. L. N. Geisinger.....	Auburn.....	51.9	....	....
31173	Dr. Geo S. Bliss.........	Fort Wayne .	50.5	6.33	7.0
31174	Dr. Geo S. Bliss.........	Fort Wayne .	52.2	2.68	9.08
31175	Dr. Geo. S. Bliss........	Fort Wayne .	50.8	4.18	6.94

CREAMS.

Of the 22 samples of cream analyzed 8 or 33.6% were listed as illegal. One of these samples contained visible dirt. The other samples were low in butter fat content. The minimum butter fat content found was 14 percent.

CREAM—LEGAL.

Laboratory No.	Manufacturer or Dealer.	Where Collected.	Per Cent of Fat.	Remarks.
30157	Perry Herring............	Marion.........	18.0	No visible dirt.
30253	Sylvester Harris..........	Anderson.......	18.0	No visible dirt.
30351	O. E. Bucknell...........	Madison.......	19.0	No visible dirt.
30358	G. Drohammer...........	Madison........	25.5	No visible dirt.
30549	M. L. Marquette..........	Brooklyn.......	20.0	No visible dirt.
30551	J. C. Wiggan............	Indianapolis....	20.0	No visible dirt.
30572	Sent in from.............	Albion.........	35.0	No visible dirt.
30573	Sent in from.............	Albion.........	34.2	No visible dirt.
30780	Sent in from.............	Indianapolis....	35.0	No visible dirt.
30893	Fred Gibson.............	Marion.........	21.0	No visible dirt.
30937	Wm. H. Block Company..	Indianapolis....	18.4	No visible dirt.
30972	Indiana Dairy & Ice Co...	Anderson.......	24.0	No visible dirt.
31096	Sent in from.............	Richmond......	20.5	No visible dirt.
31097	Sent in from.............	Richmond......	20.0	No visible dirt.

CREAM—ILLEGAL.

Laboratory No.	Manufacturer or Dealer.	Where Collected.	Per Cent of Fat.	Remarks.
30194	Sent in from.............	Indianapolis....	16.5	Low in fat.
30220	Browder Ice Cream Co....	Indianapolis....	15.0	Low in fat.
30237	Robt. J. Cook...........	Anderson.......	14.0	Low in fat.
30431	Wm. H. Block Company..	Indianapolis....	17.3	Low in fat.
30781	Sent in from.............	Indianapolis....	15.5	Low in fat.
30906	Geo P. Griffith...........	Muncie........	23.2	Visible dirt.
30907	R. F. Koldyke...........	Marion.........	17.0	Low in fat.
30911	Carey & Cravens.........	Marion.........	16.5	Low in fat.

ICE CREAM

Of the 121 samples analyzed 89 were of full legal strength. Thirty-two were lower in butter fat content. The minimum butter fat content reported was 1.8%. Most of the low samples ran above 6% and in many cases the departure from normal was evidently due to improper formulas rather than to a definite desire to defraud.

ICE CREAM—LEGAL.

Laboratory No.	Manufacturer or Retailer.	Where Collected.	Per Cent. of Fat.
30172	Sent in from	Terre Haute	8.0
30209	Zaharago Bros	Columbus	8.0
30215	Geiger & Company	Indianapolis	9.2
30227	Wm. H. Block Co	Indianapolis	11.0
30228	Wm. H. Block Co	Indianapolis	11.0
30229	Wm. H. Block Co	Indianapolis	13.0
30252	L. Geiger	Indianapolis	12.8
30252	L. Geiger	Indianapolis	13.4
30254	L. Geiger	Indianapolis	9.4
30270	Baliard Ice Cream Co	Indianapolis	11.4
30339	Geiger Candy Co	Indianapolis	16.5
30340	Geiger Candy Co	Indianapolis	13.5
30364	Wm. H. Block Co	Indianapolis	12.0
30366	Wm. H. Block Co	Indianapolis	9.0
30496	Wm. H. Block Co	Indianapolis	9.6
30497	Wm. H. Block Co	Indianapolis	9.6
30498	Wm. H. Block Co	Indianapolis	13.0
30499	D. Condos	Mishawaka	13.4
30500	M. E. Bowes	Laporte	9.6
30501	Fenick and Son	Laporte	10.0
30502	T. C. Sage	Laporte	10.4
30503	P. Blanos	Laporte	11.0
30504	J. E. Moshos	Laporte	14.6
30527	C. E. Woodruff	Topeka	8.2
30538	C. E. Woodruff	Topeka	11.6
30588	Badger Dairy Co	Columbus	11.6
30594	Coca Cola Bottling Works	Columbus	8.0
30595	Coca Cola Bottling Works	Columbus	8.1
30597	Coca Cola Bottling Works	Columbus	8.4
30598	Coca Cola Bottling Works	Columbus	8.0
30645	Sent in from	Terre Haute	13.2
30649	Sent in from	Terre Haute	8.2
30650	Sent in from	Terre Haute	19.0
30651	Sent in from	Terre Haute	8.0
30652	Sent in from	Terre Haute	10.4
30719	C. E. Woodruff	Topeka	9.6
30797	Murray and Lucian	Terre Haute	8.8
30798	W. J. Smith	Terre Haute	8.4
30799	Clif. B. Caldwell	Terre Haute	8.0
30800	Olympia Ice Cream Co	Terre Haute	8.4
30828	Sanitary Ice Cream Co	Seymour	8.0
30829	Seymour Ice Cream Co	Seymour	8.8
30830	Sanitary Ice Cream Co	Seymour	8.2
30831	Sanitary Ice Cream Co	Seymour	8.0
30839	Wm. H. Block Co	Indianapolis	8.6
30840	Wm. H. Block Co	Indianapolis	8.6
30840a	Wm. H. Block Co	Indianapolis	12.2
30841	Wm. H. Block Co	Indianapolis	10.8
30842	M. Jensen,	Clay City	9.8
30842a	Wm. H. Block Co.,	Indianapolis	8.0
30843	C. E. Woodruff	Topeka	9.2
30884	C. E. Woodruff	Topeka	8.0
30891	Charles Fields, Ballard & Co	Indianapolis	12.0
39892	Ballard Ice Cream Co	Indianapolis	15.0
30893	Ballard Ice Cream Co	Indianapolis	10.2
30894	Ballard Ice Cream Co	Indianapolis	10.0
30895	Ballard Ice Cream Co	Indianapolis	14.0
30913	H. D. and G. Robinson	Richmond	10.8
30939	J. E. Bender	Richmond	9.2
30941	Kutche and Adams	Richmond	12.5
30943	C. H. Finny	Richmond	10.0
30944	C. F. Price & Sons	Richmond	12.8
30945	Howard Hoover	Richmond	9.0
30946	Sanitary Ice Cream Co	Richmond	9.4
30947	Ed. Schwegman	Richmond	12.4
30993	C. E. Woodruff	Topeka	9.6
31025	Clarence Finney	Richmond	9.4
31026	C. F. Price & Sons	Richmond	11.6
31028	Howard Townsend	Richmond	8.0
31029	Ed. Schwegman	Richmond	10.0
31030	Howard Hoover	Richmond	10.2
31031	I. E. Bender	Richmond	9.0
31033	E. M. W. Robinson	Richmond	8.6
31034	Howard Hoover	Richmond	11.4
31043	Zaharaho Bros	Columbus	12.4

ICE CREAM—LEGAL—Continued.

Laboratory No.	Manufacturer or Retailer.	Where Collected.	Per Cent. Fat.
31044	Badger Dairy Co	Columbus	8.4
31048	Seymour Ice Cream Co	Seymour	10.2
31054	Hoover Mfg. Co	Richmond	10.6
31073	C. Downey	Francisco	12.0
31078	C. Downey	Francisco	8.8
31094	E. A. McLain	Columbus	8.4
31095	C. E. Woodruff	Topeka	...
31117	Sent in from	Richmond	9.4
31118	Sent in from	Richmond	14.0
31119	Sent in from	Richmond	14.0
31120	Sent in from	Richmond	9.0
31121	Sent in from	Richmond	10.8
31122	Sent in from	Richmond	8.7
31123	Sent in from	Richmond	9.6
31124	Sent in from	Richmond	12.0
31125	Sent in from	Richmond	13.6
31126	Sent in from	Richmond	8.6
31127	Sent in from	Richmond	14.0

ICE CREAM—ILLEGAL.

Laboratory No.	Manufacturer or Retailer.	Where Collected.	Per Cent. of Fat.	Remarks.
30206	A. E. Schumaker	Columbus	4.5	Low in fat.
30207	A. E. Schumaker	Columbus	6.0	Low in fat.
30208	A. E. Schumaker	Columbus	6.0	Law in fat.
30218	Sent in from	Topeka	5.6	Low in fat.
30221	Ballard Ice Cream Co	Indianapolis	6.0	Low in fat.
30235	Sullivan Ice Cream Co	Sullivan	5.8	Low in fat.
30268	Velvet Ice Cream Co	Indianapolis	7.2	Low in fat.
30269	A. E. Schumaker	Columbus	7.2	Low in fat.
30494	Geiger Candy Co	Indianapolis	4.4	Low in fat.
30495	Geiger Candy Co	Indianapolis	5.2	Low in fat.
30505	F. W. Burn	Mishawaka	7.8	Low in fat.
30506	Pagin Sanitary Dairy	Laporte	7.6	Low in fat.
30596	Coca Cola Bottling Works	Columbus	7.2	Low in fat.
30646	Sent in from	Terre Haute	7.8	Low in fat.
30647	Sent in from	Terre Haute	6.0	Low in fat.
30648	Sent in from	Terre Haute	3.2	Low in fat.
30663	Sent in from	Fort Wayne	5.4	Low in fat.
30766	Indianapolis Creamery Co	Indianapolis	6.4	Low in fat.
30826	Gallamore Ice Cream Co	Seymour	6.6	Low in fat.
30827	Seymour Ice Cream Co	Seymour	6.0	Low in fat.
30838	Gallamore Ice Cream Co	Seymour	7.0	Low in fat.
30940	Clem Thistlewaite	Richmond	6.0	Low in fat.
30942	Howard Townsend	Richmond	6.0	Low in fat.
31027	Clem Thistlewaite	Richmond	7.2	Low in fat.
31032	Sanitary Ice Cream Co	Richmond	5.2	Low in fat.
31046	John Cosmas	North Vernon	1.8	Low in fat.
31047	John Cosmas	North Vernon	5.6	Low in fat.
31069	Gallamore Ice Cream Co	Seymour	6.0	Low in fat.
31070	Puritan Ice Cream Co	Columbus	6.2	Low in fat.
31071	Sanitary Ice Cream Co	Seymour	6.8	Low in fat.
31150	Sanitary Ice Cream Co	Seymour	6.4	Low in fat.
31158	Gallamore Ice Cream Co	Seymour	7.2	Low in fat.

BEVERAGES.

BEER.

Fourteen samples of beer were analyzed during the year. Most of these samples were sent in by peace officers for the purpose of determining whether or not the liquor laws were violated by its sale.

BEER.

Laboratory No.	Manufacturer or Retailer.	Where Collected.	Immersion Reading.	Per Cent. Alcohol by Volume.
30469	Sent in from	Goshen	19.2	4.41
30716	Sent in from	Peru	18.7	4.36
30717	Sent in from	Peru	18.6	4.32
30718	Sent in from	Indianapolis	....	1.08
30880	V. E. Trittipo	Fishers	17.4	3.17
30932	E. P. Carr	English	....	4.46
30933	Sent in from	New Albany	....	4.39
30934	E. P. Carr	English	....	4.46
30935	E. P. Carr	English	....	4.01
30974	E. P. Carr	English	....	4.46
30975	E. P. Carr	English	....	4.39
30976	E. P. Carr	English	....	4.46
30977	E. P. Carr	English	....	4.01
31130	Sanford Murphy	New Washington	17.5	4.33

TEMPERANCE BEER.

Forty-eight temperance beers were examined, 23 of which were illegal in every case save one because the alcohol content was above the limits set by law for a dry or temperance beverage. In most cases the alcohol content ran above three percent, showing not an illegal temperance beer but a genuine beer illegally labeled. Temperance beers bearing the label of the Pabst Brewing Company, for instance, showed an alcohol content of 1.82 and 1.70 percent. If the temperance beers classed as illegal had been sold as beers, but seven would be found in the illegal class.

TEMPERANCE BEERS—LEGAL.

Laboratory No.	Article.	Manufacturer or Dealer.	Immersion Reading.	Per Cent. Alcohol by Volume.
30187	Temperance Beer	R. H. Brown, Monon	15.5	.44
30198	Ambrosia	Robert Renitz, Noblesville	13.4	.18
30252	Temperance Beer	Bridges and Son, Crothersville	14.5	.50
30285	Alpha	C. E. Glass, Greentown	13.3	.09
30365	Temperance Beer	Princeton Bottling Works, Princeton	13.9	.00
30368	Temperance Beer	C. A. Hunerwadel, Lafayette	17.4	.34
30630	Ambrosia	Griggs and Company, Paoli	15.1	.38
30723	Temperance Beer	C. W. Mumaw, Warsaw	14.0	.09
39763	Temperance Beer	Brant and Beebe, Warsaw	15.0	.52
30765	Temperance Beer	Sent in from Aurora	15.0	.52
30779	Temperance Beer	Sent in from Indianapolis	13.8	.31
30849	Temperance Beer	Sent in from Indianapolis	15.0	.52
30850	Temperance Beer	Mr. R. A. Martin, Bourbon	13.8	.11
30851	Temperance Beer	Brant and Beebe, Warsaw	14.3	.33
30923	Buck	National Beverage Co., Chicago, Illinois	15.5	.53
30924	Ambrosia	M. E. Swigart, Fortville	....	.00
30932	Temperance Beer	Brant and Beebe, Warsaw	14.5	.21
30933	Temperance Beer	J. K. Stine, Morocco	14.5	.21
31022	Temperance Beer	Warren Bottling Works, Warren	15.0	.52
31103	Temperance Beer	Mr. Meredith, Culver	13.9	.40
31104	Temperance Beer	Mr. Meredith, Culver	13.7	.23
31105	Temperance Beer	Mr. Meredith, Culver	13.8	.31
31106	Temperance Beer	Mr. Meredith, Culver	13.7	.23
31107	Temperance Beer	Mr. Meredith, Culver	13.7	.23
31129	Temperance Beer	Warren Bottling Works, Warren	15.5	.45

TEMPERANCE BEER—ILLEGAL.

Laboratory No.	Article.	Manufacturer or Dealer.	Immersion Reading.	Per Cent. Alcohol by Volume.	Remarks.
29689	Temperance Beer..	Pabst Brewing Co., Milwaukee	17.0	1.70	High in alcohol.
29690	Temperance Beer..	Pabst Brewing Co., Milwaukee	17.15	1.82	High in alcohol.
30140	Temperance Beer..	R. H. Brown. Monon.........	22.0	5.52	High in alcohol.
30150	Temperance Beer..	R. H. Brown, Monon.........	22.0	5.52	High in alcohol.
30186	Temperance Beer..	R. H. Brown, Monon.........	21.5	5.15	High in alcohol.
30188	Temperance Beer..	R. H. Brown, Monon.........	20.5	4.41	High in alcohol.
30189	Temperance Beer..	R. H. Brown, Monon.........	21.5	5.15	High in alcohol.
30190	Temperance Beer..	R. H. Brown, Monon.........	21.0	4.80	High in alcohol.
30203	Ambrosia.........	C. R. Mills, Campbellsburg.	17.1	3.14	High in alcohol.
30204	Maltena..........	Sent in from Campbellsburg.	18.3	4.03	High in alcohol.
30205	Ambrosia.........	Sent in from Campbellsburg.	17.6	3.51	High in alcohol.
30346	Temperance Beer..	Oscar Lanphar, Princeton......	17.6	3.12	High in alcohol.
30622	Mead............	Geo. W. Childers, Paoli..........	16.0	1.36	High in alcohol.
30715	Temperance Beer..	R. Fritz & Son, Fairmount.....	13.9	.62	High in alcohol.
30731	Temperance Beer..	Sent in from Aurora.........	15.3	.77	High in alcohol.
30732	Temperance Beer..	Sent in from Aurora.........	15.3	.77	High in alcohol.
30778	Temperance Beer..	C. E. Woodruff, Topeka........	14.1	.16	Misbranded.
31023	Temperance Beer..	Warren Bottling Works, Warren	15.35	.77	High in alcohol.
31075	Bevo.............	Sent in from Marion........	15.8	.68	High in alcohol.
31128	Temperance Beer..	J. D. Hussey, Princeton......	16.0	.89	High in alcohol.
31212	Temperance Beer..	Sent in from Indianapolis...	18.0	3.81	High in alcohol.
31213	Temperance Beer..	Sent in from Indianapolis...	18.0	3.81	High in alcohol.

CIDER.

Twenty samples of cider were analyzed. Two were listed as legal and 18 as illegal. Eleven were so listed because their alcohol content was far above that allowable in cider and unfermented fruit juice. Two samples were heavily watered, 4 were artificial and one contained alum. The alcohol content ranged from 1.85 to 9.83 percent.

CIDER—LEGAL.

Laboratory No.	Manufacturer or Retailer.	Kind.	Preservative.	Remarks.
30367	E. H. Snyder, Indianapolis..........	Apple....	None......	Legal.
31098	Sent in from Richmond.............	Apple....	None......	Legal.

CIDER—ILLEGAL.

Laboratory No.	Manufacturer or Retailer.	Preservatives.	Per Cent of Alcohol.	Remarks.
30195	Sent in from Markleville	None	5.92	High in alcohol.
30217	Sent in from Elkhart	None	....	Heavily watered.
30250	Fred Baxter, Indianapolis	None	....	Alum present.
30254	S. J. Brown, Rochester	None	5.10	
30434	A. H. Felker, Lebanon	None	5.49	High in alcohol.
30435	A. H. Felker, Lebanon	None	9.83	High in alcohol.
30439	A. H. Felker, Lebanon	None	8.04	High in alcohol.
30440	A. H. Felker, Lebanon	None	1.85	High in alcohol.
30713	Sent in from Bluffton	None	4.36	High in alcohol.
30762	Sent in from Kokomo	None	7.73	High in alcohol.
30764	Dean and Spivey, Bluffton	None	5.80	High in alcohol.
30824	Elmer Merilees, Leavenworth	None	9.35	High in alcohol.
30894	M. D. Read, Idaville	None	7.31	High in alcohol.
31132	John Smith, Indianapolis	None	....	Artificial.
31133	Dick Crowe, Indianapolis	None	....	Artificial.
31134	Ellen Burns, Indianapolis	None	....	Artificial.
31135	A. D. Littler, Indianapolis	None	....	Artificial.
31136	Louis Houk, Hoagland	None	.84	Heavily watered.

WINE.

In order to determine the character of several low grade wines they were analyzed by the side of wines of similar character and standard quality. Although the price paid for the wines varied greatly, the chemical analysis did not show a marked difference in composition.

WINES—LEGAL.

Kind	Port.	Port.	Sherry.	Sherry.	Anglica.	Anglica.
Laboratory Number	10561B	10562B	10563B	10564B	10565B	10566B
Specific Gravity at 20°C	1.0201	1.0291	.9880	.9917	1.0317	1.0259
Alcohol by Volume	20.09	13.47	18.99	21.49	22.38	19.60
Alcohol by Weight	16.35	10.88	15.43	17.51	18.25	15.94
Immersion at 22° C	43.2	32.4	41.4	45.5	46.5	43.2
Glycerol	0.888	0.7119	0.5929	0.6343	0.7850	0.542
Glycerol-Alcohol Ratio	6.04:100	6.54:100	3.84:100	3.62:100	4.30:100	3.40:100
Extract	12.519	12.7310	3.422	4.8470	15.9780	12.1460
Ash	0.414	0.2030	0.2670	0.3120	0.3980	0.4550
Ash Extract Ratio	1:30.5	1:62.7	1:12.81	1:15.53	1:40.14	1:28.9
Total Acids	1.0010	0.8640	0.7020	0.9000	0.7740	0.5220
Volatil Acids	0.1032	0.0912	0.0792	0.1344	0.1656	0.0744
Fixed Acids	0.8720	0.7500	0.6030	0.7320	0.5670	0.4290
Tartaric Acid	0.0225	0.0450	0.0337	0.0192	0.02025	0.0315
Reducing Sugars Before Inversion	8.184	9.352	1.1440	2.432	11.240	....
Reducing Sugars After Inversion	9.000	9.992	2.0720	2.584	12.008	6.7120
Chorides as Sodium Chloride	0.0170	0.0140	0.0110	0.0095	0.0070	0.0100
Sulphurous Acid	0.0146	....	0.0031	0.0064	0.0087	0.0107
Proteids	0.8050	0.4550	0.2800	0.2800	0.2800	0.4900

EXTRACTS.

Laboratory No.	Kind.	Manufacturer or Retailer.	Remarks.
30419	Lemon	Boston Big Stores, Marion	Properly labeled.
30424	Vanilla	Boston Big Stores, Marion	Properly labeled.
30922	Lemon	L. E. Carter, Geneva	Properly labeled.

FLOUR.

Laboratory No.	Consignee.	Kind.	Remarks.
30230	Wallace E. Miller, Greentown	Wheat	No foreign starch present.
30388	Sent in from Indianapolis	Buckwheat	Small amount wheat flour present.
30447	George Cassel, Angola	Buckwheat	Trace wheat starch present.
30741	E. Huddleston, Burlington	Wheat	No mould spores present.
30806	Jos. Brudi & Co., New Haven	Mixed	Legal.
30960	M. T. Niman, Indianapolis	Gluten	Nitrogen 2.24: Protein 14.0.
30973	Sent in from Indianapolis	Wheat	Sample contained sand.
30989	Sent in from Indianapolis	Gluten	Not a gluten flour.
31172	M. E. Lawrence, Warsaw	Wheat	No corn starch present.

GLUTEN BREAD.

Laboratory No.	Sent in from.	Moisture.	Protein on Dry Basis.	Remarks.
30589	Sponsel's Bakery, Indianapolis	40.1	57.6	Not a gluten bread.
30990	Sent in from Indianapolis			Legal.
31019	Sent in from Indianapolis	33.7	34.35	Legal.
31020	Sent in from Indianapolis	43.3	18.98	Not a gluten bread.

GRAPE FRUIT.

In years past grape fruit has been shipped to Indiana long before it was matured and fit for consumption. In order to determine the character of green grape fruit several samples were analyzed. The results of the analysis are shown in the following table.

GRAPE FRUIT—LEGAL.

Laboratory No.	Manufacturer or Dealer.	Acidity.	Total Solids.	Ratio.
30247	C. L. Deitz, Indianapolis	1.34	9.030	1 to 6.8.
30267	J. M. Pinto & Co., Indianapolis	1.15	9.695	1 to 8.4.
30271	Sabira Schor, Indianapolis	.56	10.655	1 to 8.9.
30493	Block and Co., Indianapolis		10.725	
30813	Sent in from Indianapolis	2.46	9.495	1 to 7.52.
30815	Costro Fruit Co., Porta Rica	1.28	9.780	1 to 7.64.
30817	Sent in from Indianapolis	1.23	9.290	1 to 7.55.

GRAPE FRUIT—ILLEGAL.

Laboratory No.	Manufacturer or Dealer.	Acidity.	Total Solids.	Ratio.
30266	C. W. Chewning, Indianapolis	1.868	9.020	1 to 4.83.
30266a	C. W. Chewning, Indianapolis	1.638	7.735	1 to 4.74.
30266d	C. W. Chewning, Indianapolis	1.907	9.145	1 to 4.79.
30266c	C. W. Chewning, Indianapolis	1.651	7.920	1 to 4.79.
30268	Vandersaar Co., Indianapolis..............	1.54	9.805	1 to 6.35.
30269	Geo. Hitz & Co., Indianapolis..............	1.84	11.675	1 to 5.93.
30270	Keach Commission House, Indianapolis.....	1.68	9.795	1 to 5.93.
30814	May Raymond, Indianapolis..............	1.91	10.795	1 to 5.66.
30816	Schideler Commission House, Indianapolis...	1.43	8.955	1 to 6.27.

HONEY.

Laboratory No.	Where Collected.	Polarization.		Per Cent. Sucrose.	Total Solids.	Ash.	Remarks.
		Direct	Invert				
30443	Columbus........	—12.0	—19.8	5.99	80.17	.176	Legal.
30938	Indianapolis......	—20.0	—21.12	.84	75.89	.15	Legal.

JELLIES AND JAMS.

Laboratory No.	Kind.	Manufacturer.	Coloring.	Preservatives.
30166	Rasberry Jelly......	E. F. Monn & Son, Indianapolis..................	None....	None.
30167	Strawberry Jam.....	E. F. Monn & Son, Indianapolis..................	None....	Benzoate.
30415	Quince Jelly........	Vera Biscomb, Marion....	None....	None.
30416	Orange Marmalade..	Vera Biscomb, Marion....	None....	None.
30417	Grape Jelly.........	Vera Biscomb, Marion....	None....	None.
30422	Grape Jelly.........	Boston Big Store, Marion.	None....	None.
30444	Apple Butter.......	Sent in from Muncie......	None....	None.
30454	Apple Butter.......	Stephen Kuth, Richmond	None....	None.
30560	Apple Jelly.........	The Crowley Co., Vincennes...................	None....	None.
30561	Strawberry Jam.....	The Crowley Co., Vincennes...................	None....	None.
30929	Apple Butter......	Sent in from Bloomington.	None...	None.
31024	Strawberry Jam.....	Cruikshank Bros., Indianapolis................	None....	None.

MAPLE SYRUP—LEGAL.

Laboratory No.	Manufacturer or Retailer.	Polarization		Sucrose.	Total Ash.	Alkalinity of Ash.		Moisture
		Direct.	Invert.			Soluble.	Insoluble.	
30621	Sent in from Muncie.............	+65.0	—20.02	64.4	.50	.29	.28	33.76
30698	Sent in from Muncie.............	+65.0	—20.02	64.4	.50	.29	.28	33.76
30201	Sent in from Odon...............	+63.2	—17.38	62.0	.89	.48	.41	35.00
30272	Sent in from Kingman...........	+53.0	—22.00	57.7	.79	.36	.43	34.88
30438	Sent in from Attica..............	+65.0	—20.9	64.2	.60	.34	.26	33.00
30461	John F. Givan, Moores Hill.......	+63.0	—14.3	58.26	.80	.49	.31	30.60
30464	Sent in from Indianapolis.........	+68.6	—18.04	65.31	.63	.41	.22	....
30949	J. H. Brewster, Newcastle, Pa.....	+52.6	—13.86	50.4	1.10	.73	.37	29.91

MEAT PRODUCTS.

HAMBURGER.

One hundred and sixty-two samples of hamburger steak were examined of which 37 or 22.8% were listed as illegal, in every case save two because of the presence of sulphites. Two samples were adulterated with starch, a rather unusual adulterant of hamburger steak.

HAMBURGER—LEGAL.

Laboratory No.	Manufacturer or Retailer.	Starch.	Borax.	Sulphites.
30013	Edw. Zahrt, Laporte	None	None	None.
30014	Edw. Zahrt, Laporte	None	None	None.
30015	T. Tittle, Laporte	None	None	None.
30016	F. W. Steigley. Laporte	None	None	None.
30017	F. W. Steigley, Laporte	None	None	None.
30018	H. C. Tanke, Laporte	None	None	None.
30019	G. S. Grover, Laporte	None	None	None.
30020	Buehler Bros., Michigan City	None	None	None.
30021	W. E. Smith, Michigan City	None	None	None.
30144	Horn Bros., Valparaiso	None	None	None.
30146	Joe Tittle, Valparaiso	None	None	None.
30150	Tittle Bros., Gary	None	None	None.
30199	Kelsie and Son, Markle	None	None	None.
30225	Arthur Gagnon, Goodland	None	None	None.
30288	C. F. Moyer, Elkhart	None	None	None.
30290	Buehler Bros., Elkhart	None	None	None.
30293	F. C. Waterman, Elkhart	None	None	None.
30294	Shick Bros., Elkhart	None	None	None.
30296	Reim & Longley, Elkhart	None	None	None.
30297	Robbins & Swinehart, Elkhart	None	None	None.
30299	E. Ruch, Elkhart	None	None	None.
30405	J. E. Hays, Muncie	None	None	None.
30413	Buehler Bros., Muncie	None	None	None.
30417	Peter Goebel, Muncie	None	None	None.
30428	Sent in from Michigan City	None	None	None.
30430	W. Miller, Michigan City	None	None	None.
30442	Poe and Brunst, Ladoga	None	None	None.
30444	Shaw Bros. & Banister, Crawfordsville	None	None	None.
30447	B. F. Stout, Crawfordsville	None	None	None.
30449	Hack Bros., Crawfordsville	None	None	None.
30451	M. L. Gleason, Crawfordsville	None	None	None.
30456	F. A. Scheidler, Richmond	None	None	None.
30457	Buehler Bros., Richmond	None	None	None.
30465	Thos. Sohl, Noblesville	None	None	None.
30465a	A. J. Street, Marion	None	None	None.
30470	C. F. Barney, Marion	None	None	None.
30471	Swayzee Market, Marion	None	None	None.
30474	Buehler Bros., Marion	None	None	None.
30476	E. V. Barney, Marion	None	None	None.
30482	O. J. Strance, Hartford City	None	None	None.
30483	Chas. Ritter, Hartford City	None	None	None.
30485	Jap Poor, Hartford City	None	None	None.
30488	Millner Provision Co., Frankfort	None	None	None.
30489	Cooperative Co., Fort Wayne	None	None	None.
30490	Karns Bros., Fort Wayne	None	None	None.
30490a	A. E. Louks, Frankfort	None	None	None.
30491	Rosenthal & Lueth, Zionsville	None	None	None.
30502	Stoody and Zwerner, Clinton	None	None	None.
30509	S. J. Bressett, Terre Haute	None	None	None.
30512	B. C. Baester, Terre Haute	None	None	None.
30513	Oakley's, Terre Haute	None	None	None.
30515	Daisie Valentine, Terre Haute	None	None	None.
30517	L. C. Kistler, Mishawaka	None	None	None.
30519	F. Zimmerman, Mishawaka	None	None	None.
30521	Woodka Bros., Mishawaka	None	None	None.
30523	Fred Weber, Mishawaka	None	None	None.
30527	The Fair, Goshen	None	None	None.
30529	M. Shookman, Goshen	None	None	None.
30531	J. A. Lower, Goshen	None	None	None.

HAMBURGER—LEGAL—Continued.

Laboratory No.	Manufacturer or Retailer.	Starch.	Borax.	Sulphites.
30533	A. W. Jacobs, Goshen	None	None	None.
30554	Chas. L. Wood, Kokomo	None	None	None.
30559	The Crowley Co., Vincennes	None	None	None.
30564	Harry Zink, Monticello	None	None	None.
30567	E. Bell & Son, Kokomo	None	None	None.
30570	Dowdell & Baker, Kokomo	None	None	None.
30572	Williams Bros., Kokomo	None	None	None.
30574	C. A. Malaby, Kokomo	None	None	None.
30577	Pierce and Son, Kokomo	None	None	None.
30577a	Chicago Meat Market, Terre Haute	None	None	None.
30579	C. Cain, Monticello	None	None	None.
30581	B. F. Harrison, Clinton	None	None	None.
30582	Frazier & Jacks, Monticello	None	None	None.
30595	Bazley Meat Market, Lafayette	None	None	None.
30605	Abe Stern, Logansport	None	None	None.
30609	F. W. Kinney, Logansport	None	None	None.
30633	Keller and Britzman, Hartford City	None	None	None.
30634	J. D. Bain, Hartford City	None	None	None.
30636	Funey Bros., Plymouth	None	None	None.
30638	Pesch Bros., Plymouth	None	None	None.
30641	C. F. Taylor, Rochester	None	None	None.
30642	A. W. Smith, Rochester	None	None	None.
30660	R. H. Sandwein, Richmond	None	None	None.
30661	Chas. Haller, Richmond	None	None	None.
30665	Lautzhizer, North Manchester	None	None	None.
30666	Wanderly & Keefe, N. Manchester	None	None	None.
30685	W. A. Schellert, Dunkirk	None	None	None.
30686	Keller & Britzman, Hartford City	None	None	None.
30687	J. D. Bain, Hartford City	None	None	None.
30689	Funey Bros., Plymouth	None	None	None.
30691	Pesch Vros., Plymouth	None	None	None.
30693	A. W. Smith, Rochester	None	None	None.
30696	C. F. Taylor, Rochester	None	None	None.
30707	Buehler Bros., Richmond	None	None	None.
30740	Sent in from Mishawaka	None	None	None.
30783	Jas. Pap, Richmond	None	None	None.
30843	Leikauf Packing Co., Fort Wayne	None	None	None.
30846	C. H. Michel, Fort Wayne	None	None	None.
30849	Henry Hoffman, Fort Wayne	None	None	None.
30850	Herman Scheele, Fort Wayne	None	None	None.
30851	Dudenhaefer Bros., Fort Wayne	None	None	None.
30852	George Bender, Fort Wayne	None	None	None.
30853	H. Grosh & Son, Fort Wayne	None	None	None.
30854	Gordon & Middleton, Fort Wayne	None	None	None.
30856	Holland Sissianc, Fort Wayne	None	None	None.
30858	Henry Rinewald, Fort Wayne	None	None	None.
30859	F. Kappenhafer, Fort Wayne	None	None	None.
30860	Wilkens Bros., Fort Wayne	None	None	None.
30884	W. J. Doell, Huntington	None	None	None.
30885	Chas, Middleton, Huntington	None	None	None.
30887	L. A. Ertzinger, Huntington	None	None	None.
30888	Nicholas Lindermuth, Huntington	None	None	None.
30890	Nicholas Lindermuth, Huntington	None	None	None.
30914	E. O. Fecker, Indianapolis	None	None	None.
30917	Kate Hamill, Indianapolis	None	None	None.
30919	John Schisla, Indianapolis	None	None	None.
30922	H. G. Arnold, Indianapolis	None	None	None.
30923	J. E. & E. F. Overman, Indianapolis	None	None	None.
30925	Frank Overman, Indianapolis	None	None	None.
30950	Paul Brandlein, Indianapolis	None	None	None.
30951	H. R. Matzke, Indianapolis	None	None	None.
30953	Joe.Fecker, Indianapolis	None	None	None.
30956	F. Wurster, Indianapolis	None	None	None.
30957	G. Merklin, Indianapolis	None	None	None.
30958	F. W. Wittendorfer, Indianapolis.	None	None	None.
30964	Swartz & Baldorf, Auburn	None	None	None.

HAMBURGER—ILLEGAL.

Laboratory No.	Manufacturer or Retailer.	Starch.	Borax.	Sulphites.
30012	Cash Meat Market, Chesterton		None	.085
30148	Independent Market, E. Chicago		None	.070
30149	Diamond & Co., Gary		None	.034
30222	E. E. Clark, Garrett		None	Present.
30224	Ross & Hays, Garrett		None	Present.
30225	J. S. Clark, Kendallville		None	Present.
30226	J. S. Clark, Kendallville		None	Present.
30227	Swartz & Shook, Kendallville		None	Present.
30228	Swartz & Shook, Kendallville		None	Present.
30276	E. E. Clark, Garrett		None	Present.
30278	Ross & Hays, Garrett		None	Present.
30282	J. S. Clark, Kendallville		None	Present.
30284	J. S. Clark, Kendallville		None	Present.
30286	Swartz & Shook, Kendallville		None	Present.
30386a	Black and Thorp, Warren		None	Present.
30387	Black and Thorp, Warren		None	.154
20414	Ed. A. Hoffman, Muncie	None	None	.267
30418	Chas. Hoffer, Muncie	None	None	.085
30419	J. R. Reeves, Muncie	None	None	.251
30443	M. Shookman, Goshen	None	None	.098
30462	George Rapp, Hartford City	None	None	Present.
30484	Weeks Meat Market, Rushville	None	None	.048
30487	Fort Wayne Beef Co., Fort Wayne	None	None	.094
30496	Fred Eckhart, Fort Wayne	None	None	.124
30497	National Market, Fort Wayne	None	None	.141
30499	Frank Parrott, Fort Wayne	None	None	.275
30500	The Preece Market, Clinton	None	None	.230
30644	Sent in from Richmond	None	None	.390
30682	Henry Nungesser, Richmond		None	.390
30684	Frank Scheibles, Richmond		None	.093
30782	John Mayer, Richmond	Present	None	None.
30805	Mrs. Sam Haller, Fort Wayne	None	None	.065
30818	C. M. Mooney, Terre Haute	Present	None	None.
30822	L. R. Welker, Fort Wayne	None	None	.042
30823	Peter Schrick, Fort Wayne	None	None	.095
30882	L. M. Stoffer, Huntington	None	None	.102
30925	Louis Baum, Shirely	None	None	.269

SAUSAGE.

One hundred and seventy-five sausage samples were examined, of which 27 were listed as illegal either because of the presence of starch or sulphites or, as in one instance, because the sale was decidedly short weight.

SAUSAGE—LEGAL.

Laboratory No.	Manufacturer or Retailer.	Starch.	Borax.	Sulphites.
30022	Ed. Zahrt, Laporte	None	None	None.
30023	J. Tittle, Laporte	None	None	None.
30024	J. C. Tanke, Laporte	None	None	None.
30025	G. S. Groves, Laporte	None	None	None.
30147	Jos. Tittle, Valparaiso	None	None	None.
30151	Henry Kannerling, Greensburg	None	None	None.
30152	McCormick & Richey, Greensburg	None	None	None.
30153	Louis Bohren, Greensburg	None	None	None.
30226	George Buch, Goodland	None	None	None.
30265	Albert Ault, Columbus	None	None	None.
30272	Chas. B. Dawson, Vincennes	None	None	None.
30273	A. L. Bonhimme, Vincennes	None	None	None.
30274	John Schumaker, Vincennes	None	None	None.
30275	C. B. O'Donell, Vincennes	None	None	None.
30276	Albert Ault, Columbus	None	None	None.

SAUSAGE—LEGAL—Continued.

Laboratory No.	Manufacturer or Retailer.	Starch.	Borax.	Sulphites.
30277	Lawson Meat Co., Columbus	None	None	None.
30278	McLaughlin & Pierce, Columbus	None	None	None.
30279	Lawson Meat Co., Columbus	None	None	None.
30280	Krauss & Boyer, Columbus	None	None	None.
30281	Ross and Hays, Garrett	None	None	None.
30281a	Boechan & Schafer, Columbus	None	None	None.
30282	D. E. Robertson, Columbus	None	None	None.
30283	J. S. Clark, Kendallville	None	None	None.
30283a	Boechan & Schafer, Columbus	None	None	None.
30285	Geo. J. Clark, Kendallville	None	None	None.
30289	C. F. Moyer, Elkhart	None	None	None.
30291	W. Miller, Michigan City	None	None	None.
30291a	Buehler and Son, Elkhart	None	None	None.
30292	Shick Bros., Elkhart	None	None	None.
30295	Reim & Longley, Elkhart	None	None	None.
30298	E. Ruch, Elkhart	None	Oone	None.
30406	J. E. Hays, Muncie	None	None	None.
30408	J. E. Hays, Muncie	None	None	None.
30429	F. Deingler, Michigan City	None	None	None.
30432	C. E. Louks, Frankfort	None	None	None.
30443	Samuel Evans, Linden	None	None	None.
30445	Shaw Bros. & Banister, Crawfordsville	None	None	None.
30446	Fink and Son, Crawfordsville	None	None	None.
30448	Henry Nungesser, Richmond	None	None	None.
30448a	B. F. Stout, Crawfordsville	None	None	None.
30449	Lang Bros., Richmond	None	None	None.
30450	J. S. Scheidler, Richmond	None	None	None.
30451	John F. Maher, Richmond	None	None	None.
30452	Buehler Bros., Richmond	1.107	None	None.*
30455	Guy Bull, Richmond	.41	None	None.*
30458	John F. Maher, Richmond	None	None	None.
30463	A. J. Street, Marion	None	None	None.
30463a	W. O. Perkins & Sons, Noblesville	None	None	None.
30464	Thomas Sohl, Noblesville	None	None	None.
30466	Watson Bros., Marion	None	None	None.
30467	Creviston Meat Market, Marion	None	None	None.
30468	Fred Horn, Marion	None	None	None.
30469	Carl F. Barney, Marion	None	None	None.
30472	Swayzee Market, Marion	None	None	None.
30473	Buehler Bros., Marion	None	None	None.
30475	E. V. Barney, Marion	None	None	None.
30477	Buehler Bros., Marion	None	None	None.
30484	Chas. Ritter, Hartford City	None	None	None.
30486	Michael & Michael, Russiaville	None	None	None.
30487	W. N. Wall, Frankfort	None	None	None.
30489	Frank Miner, Frankfort	None	None	None.
30491	Fort Wayne Beef Co., Ft. Wayne	None	None	None.
30492	Fort Wayne Cooperative Co., Ft. Wayne	None	None	None.
30493	Fred Eckhart, Fort Wayne	None	None	None.
30494	National Market, Fort Wayne	None	None	None.
30503	Stoody & Zwerner, Clinton	None	None	None.
30504	Clinton Packing Co., Clinton	None	None	None.
30506	F. Naggar, Terre Haute	None	None	None.
30507	W. F. Taylor, Terre Haute	None	None	None.
30508	C. L. Witty, Terre Haute	None	None	None.
30510	S. J. Bresett, Terre Haute	None	None	None.
30511	G. C. Baester, Terre Haute	None	None	None.
30514	Daisy Valentine, Terre Haute	None	None	None.
30516	Bazley Meat Market, Lafayette	None	None	None.
30520	F. Zimmerman, Mishawaka	None	None	None.
30522	Woodka Bros., Mishawaka	None	None	None.
30524	Fred Weber, Mashawaka	None	None	None.
30525	Fred Major, Mishawaka	None	None	None.
30526	Fred Major, Mishawaka	None	None	None.
30528	The Fair, Goshen	None	None	None.
30530	M. Shookman, Goshen	None	None	None.
30532	J. A. Lower, Goshen	None	None	None.
30534	A. W. Jacobs, Goshen	None	None	None.
30550	Sent in from Richmond	None	None	None.
30551	Peoples Meat Market, Rushville	None	None	None.
30552	Kramer Meat Market, Rushville	None	None	None.
30553	Horn Bros., Valparaiso	None	None	None.
30553a	Jesse Booth, Rushville	None	None	None.

SAUSAGE—LEGAL—Continued.

Laboratory No.	Manufacturer or Retailer.	Starch.	Borax.	Sulphites.
30563	Harry Zink, Monticello	None	None	None.
30564	C. P. Sidlinger, Shelbyville	None	None	None.
30565	Frazier Bros., Kokomo	None	None	None.
30568	E. Bell & Son, Kokomo	None	None	None.
30569	Critchlow Bros., Kokomo	None	None	None.
30571	Dowdell & Baker, Kokomo	None	None	None.
30573	Williams Bros., Kokomo	None	None	None.
30575	C. A. Malaby, Kokomo	None	None	None.
30576	W. H. Keck, Kokomo	None	None	None.
30578	Chicago Meat Market, Terre Haute	None	None	None.
30578a	Pierce & Son, Kokomo	None	None	None.
30579	W. Fatthauer, Terre Haute	None	None	None.
30580	C. Cain, Monticello	None	None	None.
30581	Frazier Jackson, Monticello	None	None	None.
30582	B. F. Harrison, Clinton	None	None	None.
30585	Wm. Klee, Terre Haute	None	None	None.
30601	Elfers and Miller, Logansport	None	None	None.
30602	Louis Luck, Logansport	None	None	None.
30603	M. McCaffery Co., Logansport	None	None	None.
30604	McDowell & Routh, Logansport	None	None	None.
30606	Abe Stern, Logansport	None	None	None.
30610	F. W. Kinney, Logansport	None	None	None.
30635	John Sliffer, Garrett	None	None	None.
30637	R. E. Cannon, Plymouth	None	None	None.
30639	Pesch Bros., Plymouth	None	None	None.
30640	H. Kiesing, Rochester	None	None	None.
30683	Buehler Bros., Richmond	Present	None	None.*
30688	John Sliffer, Garrett	None	None	None.
30690	R. E. Cannon, Plymouth	None	None	None.
30693	Pesch Bros., Plymouth	None	None	None.
30694	A. W. Smith, Rochester	None	None	None.
30695	H. H. Kissinger, Rochester	None	None	None.
30702	Long Bros., Richmond	None	None	None.
30720	Hill Bros., Fairmount	None	None	None.
30844	John Liekauf, Fort Wayne	None	None	None.
30845	P. A. Deitchel, Fort Wayne	None	None	None.
30847	Elmer Cash, Fort Wayne	None	None	None.
30848	N. H. Hook, Maysville	None	None	None.
30855	G. H. Weil, Fort Wayne	None	None	None.
30856	Holland Sissianc, Fort Wayne	None	None	None.
30861	Wilkens Bros., Fort Wayne	None	None	None.
30563	Chas. W. Flautz, Shelbyville	None	None	None.
30824	Sent in from Indianapolis	None	None	None.
30838	Sent in from Muncie	None	None	None.
30883	W. J. Doell, Huntington	None	None	None.
30886	Chas. Middleton, Huntington	None	None	None.
30889	Nicholas Lindermuth, Huntington	None	None	None.
30896	W. H. Swain, Huntington	None	None	None.
30915	Horace Boston, Indianapolis	None	None	None.
30916	Hilgemeier & Bros., Indianapolis	None	None	None.
30918	Sam Davis, Indianapolis	None	None	None.
30920	J. C. & E. F. Overman, Indianapolis	None	None	None.
30921	H. G. Arnold, Indianapolis	None	None	None.
30924	Frank Overman, Indianapolis	None	None	None.
30929	Sent in from Muncie	None	None	None.
30952	H. R. Matzke, Indianapolis	None	None	None.
30954	Joe Fecker, Indianapolis	None	None	None.
30955	F. Wurster, Indianapolis	None	None	None.
30962	Hilkin Bros., Auburn	None	None	None.
30965	Swartz & Baldorf, Auburn	None	None	None.

*Package labeled properly.

SAUSAGE—ILLEGAL.

Laboratory No.	Manufacturer or Retailer.	Starch.	Borax.	Sulphites.	Remarks.
30011	W. E. Smith, Michigan City	Present	None	None	
30026	Lawenstine & Son, Valparaiso	None	None	.055	
30223	Arthur Gagnon, Goodland	Present	None	None	
30223a	E. E. Clark, Garrett	None	None	Present	
30266	E. Wolf, Columbus	None	None	.100	
30267	E. Wolf, Columbus	None	None	.103	
30277	E. E. Clark, Garrett	None	None	Present	
30287	Swartz & Hook, Kendallville	None	None	Present	
30411	Edw. A. Hoffer, Muncie	None	None	.047	
30415	Chas. Hoffer, Muncie	None	None	.083	
30416	Buehler Bros., Muncie	Present	None	None	
30441	F. L. Bogeman, Shelbyville	None	None	.034	
30444	K. C. Kestler, Mishawaka	None	None	Present	
30460	Buehler Bros., Muncie	None	None	None	Short Weight.
30478	M. L. Johnson, Martin	None	None	.037	
30479	W. F. Nailer, Marion	Present	None	None	
30480	Davis & Lee, Rushiaville	Present	None	None	
30481	Millner Provision Co., Frankfort	Present	None	None	
30495	Jos. Nellerfield, Fort Wayne	None	None	.079	
30498	Frank Parrott, Fort Wayne	None	None	.141	
30501	The Preece Market, Clinton	None	None	.098	
30518	L. C. Kistler, Mishawaka	None	None	Present	
30566	T. F. Jones, Kokomo	Present	None	None	
30821	John Frederick, Fort Wayne	None	None	Present	
30820	Herman Scheele, Fort Wayne	None	None	.036	
30881	L. M. Stoffel, Huntington	None	None	.016	
30926	Sam Davis, Indianapolis	None	None	.241	

WEINERWURST.

Three of five weinerwurst samples were classed as illegal because of the presence of undeclared cereals.

WEINERWURST.

Laboratory No.	Manufacturer or Retailer.	Starch.	Borax.	Sulphites.	Remarks.
30280	E. E. Clark, Garrett	None	None	None	Legal.
30438	Henry Nungesser, Richmond	Present	None	None	Illegal.*
30439	Henry Nungesser, Richmond	Present	None	None	Illegal.*
30445	Jos. Nellerfield, Fort Wayne	None	None	None	Legal.
30819	John Rassel, Terre Haute	1.845 %	None	None	Illegal.*

*Not labeled 'Cereal'.

LARD.

But one of the 14 samples of lard examined was marked illegal and that because the sale was short weight.

LARD.

Laboratory No.	Manufacturer or Retailer.	Butyro Reading at 40° C.	Remarks.
30031	Sent in from Washington	....	No impurities present. Legal.
30033	Sent in from Huntington	50.5	Sample is pure lard.
30172	Henry Kannerling, Greensburg	51.5	Legal.
30174	H. Bohren, Greensburg	51.25	Legal.
30175	McCormick & Richey, Greensburg	50.0	Legal.
30218	Sent in from Edinburg	50.0	Legal.
30248	Sent in from Indianapolis	51.0	Legal.
30562	E. G. Fielder, Indianapolis	....	Short weight. Illegal.
30583	Jesse Booth, Rushville	49.9	Legal.
30588	Peoples Meat Market, Rushville	49.9	Legal.
30856	Mattie E. Frazier, Cloverdale	50.0	Legal.
31021	Sent in from Columbus	50.2	Legal.
31166	Geo. P. Kuntz, Greenfield	50.5	Legal.
31183	Sent in from Columbus	52.0	Legal.

OYSTERS.

Thirteen of the 21 oyster samples contained added water and for that reason were listed as illegal. These samples were selected because of their apparent high water content.

OYSTERS LEGAL

Laboratory No.	Manufacturer or Retailer.	Total Weight gms.	Total Solids	Meat.		Liquor.			Remarks.
				Weight.	Per Cent Solids.	Percent	Weight gms.	Percent Solids.	
30331	George Nicholson, Indianapolis	509	16.65	455	18.1	10.6	54.0	4.78	
30333	E. Sowders, Indianapolis	483	19.3	461	20.05	4.55	22.0	3.17	
30342	J. M. Sowders, Indianapolis	535	13.55	480	14.8	10.30	55.0	2.65	
30380	H. F. Willis, Indianapolis	460	....	410	15.86	9.20	50.0	5.12	
30381	R. Sowders, Indianapolis	550	....	465	18.3	15.45	85.0	4.57	
30382	Anne McCormick, Indianapolis	495	....	440	16.8	11.10	55.0	3.15	
30383	R. R. Sowders, Indianapolis	530	....	470	16.72	11.30	60.0	3.88	
30384	E. Sowders, Indianapolis	485	....	445	15.39	8.25	40.0	4.08	

OYSTERS ILLEGAL.

Laboratory No.	Manufacturer or Retailer.	Total Weight gms.	Total Solids.	Meat.		Liquor.			Remarks.
				Weight.	Percent Solids.	Percent	Weight	Percent Solids.	
30332	R. R. Sowders, Indianapolis	497	10.00	427	11.25	14.06	70	2.33	Added water.
30334	Hattie Egan, Indianapolis	513	11.42	420	13.90	18.10	93	1.97	Added water.
30335	J. M. Sowders, Indianapolis	442	12.75	423	13.80	4.30	19	4.04	Short Weight.
30336	E. Sowders, Indianapolis	473	12.95	427	13.91	9.70	46	4.45	Added water.
30337	R. R. Sowders, Indianapolis	489	9.97	400	11.62	18.20	89	2.49	Added water.
30352	Hattie Egan, Indianapolis	493	10.0	424	11.18	13.95	69	2.79	Added water.
30353	Anne McCormick, Indianapolis	547	12.21	472	13.63	13.70	75	3.02	Added water.
30354	R. Sowders, Indianapolis	562	12.52	457	12.56	18.70	105	3.42	Added water.
30355	H. F. Willis, Indianapolis	445	9.00	380	9.80	13.46	60	4.91	Added water.
30356	George Nicholson, Indianapolis	465	13.61	410	14.83	11.80	55	4.10	Added water.
30376	Hattie Egan, Indianapolis	483	....	357	13.56	26.10	126	2.80	Added water.
30377	George Nicholson, Indianapolis	495	....	425	12.10	14.10	70	3.79	Added water.
30378	J. M. Sowders, Indianapolis	515	....	461	14.15	10.50	54	4.54	Added water.

SORGHUM MOLASSES AND SYRUPS.

Five of the 12 sorghum syrups examined were illegal because of the presence of undeclared glucose.

SORGHUM MOLASSES AND SYRUPS.

Laboratory No.	Manufacturer or Retailer.	Polarization		Sucrose.	Glucose.	Remarks.
		Direct.	Invert.			
30200	Sent in from Muncie	+152.2	+14.45	5.09	83.5	Glucose present.
30250	Sent in from Muncie	+ 14.4	— 2.0	24.8	None...	Legal.
30251	Sent in from Muncie	+ 56.8	+44.0	19.4	52.8	Glucose present.
30324	Carter and Son, Noblesville	+ 46.4	+ 7.04	40.60	3.3	Glucose present.
30330	Sent in from Indianapolis	+ 51.2	+ 7.04	44.25	3.9	Glucose present.
30386	Sent in from Indianapolis	+ 4.0	— 2.0	4.5	None...	Legal.
30392	Carter and Son, Noblesville	+ 47.0	—16.5	48.1	None...	Legal.
30393	Carter and Son, Noblesville	+ 54.0	— 9.9	49.3	None...	Legal.
30409	Hurst Bros., Muncie	+ 36.0	—18.70	42.0	None...	Legal.
30410	W. W. Comer, Muncie	+ 32.8	+ 1.10	24.5	4.75	Glucose present.
30445	J. H. Weimer, Union City	+ 29.0	—14.30	33.25	None...	Legal.
30453	John Eggemeyer, Richmond	+ 20.0	—15.4	27.1	None...	Legal.

TOMATO PRODUCTS.

Twenty-seven samples of tomato products were examined to determine their microscopical condition. Six or 22.2% were classed as illegal because the bacterial limits and mould and yeast counts were above the standard set by the government for such products.

TOMATO PRODUCTS.

Labor-atory No.	Classification.	Manufacturer or Retailer.	Per Cent. of Moulds.	Yeasts per 1-60 mm	Bacteria per cc	Remarks.
27240	Catsup	Lang & Co., Warren				Legal.
30211	Catsup	Dyer Packing Co., Vincennes	26.0	12	14,400,000	Legal.
30216	Catsup	A. H. Perfect Co., Fort Wayne	16.0	74	46,000,000	Illegal.
30220	Tomato Pulp	Dyer Packing Co., Vincennes	18.0	16	9,600,000	Legal.
30221	Catsup	A. H. Perfect Co., Fort Wayne				Illegal.
30395	Tomato Pulp	J. T. Polk Co., Greenwood	16.0	17	16,800,000	Legal.
30395a	Tomato Pulp	J. T. Polk Co., Greenwood	12.0	16	16,800,000	Legal.
30395b	Tomato Pulp	J. T. Polk Co., Greenwood	14.0	13	14,400,000	Legal.
30395c	Tomato Pulp	J. T. Polk Co., Greenwood	12.0	18	12,000,000	Legal.
30395d	Tomato Pulp	J. T. Polk Co., Greenwood	15.0	15	14,400,000	Legal.
30396	Tomato Pulp	J. T. Polk Co., Greenwood	18.0	17	21,000,000	Legal.
30397	Tomato Pulp	J. T. Polk Co., Greenwood	18.0	21	14,400,000	Legal.
30398	Tomato Pulp	J. T. Polk Co., Greenwood	14.0	19	16,800,000	Legal.
30399	Tomato Pulp	J. T. Polk Co., Greenwood	24.0	16	19,200,000	Legal.
30400	Tomato Pulp	J. T. Polk Co., Greenwood	14.0	14	16,800,000	Legal.
30401	Tomato Pulp	J. T. Polk Co., Greenwood	14,0	12	14,400,000	Legal.
30402	Tomato Pulp	J. T. Polk Co., Greenwood	22.0	18	19,200,000	Legal.
30403	Tomato Pulp	J. T. Polk Co., Greenwood	28.0	16	12,000,000	Legal.
30835	Tomato Soup	Columbia Conserve Co., Indianapolis	16.0	10	12,000,000	Legal.
30836	Tomato Soup	Columbia Conserve Co., Indianapolis	20.0	14	19,200,000	Legal.
30837	Tomato Soup	Columbia Conserve Co., Indianapolis	16.0	8	16,800,000	Legal.
30934	Tomato Pulp	Continental Brokerage Co., Indianapolis	18.0	8	24,000,000	Legal.
30955	Tomato Paste	Morgantown Packing Co., Morgantown	88.0	21	48,000,000	Illegal.
30956	Tomato Pulp	Morgantown Packing Co., Morgantown	68.0	11	33,600,000	Illegal.
30957	Tomato Catsup	Dyer Packing Co., Vincennes	52.0	12	14,400,000	Legal.
31171	Tomato Pulp	Knightstown Conserve, Knightstown	66.0	12	43,200,000	Illegal.
31176	Tomato Pulp	Knightstown Conserve, Knightstown	68.0	16	38,400,000	Illegal.

MISCELLANEOUS VINEGARS.

Twenty-four of the 44 vinegar samples examined, or 54.5%, were listed as illegal, in practically every case because of a low acid content. Two samples contained but .81% of acetic acid. The illegal samples were for the most part the product of the farmer. Their high alcohol content showed them to be immature vinegars which in many cases should more properly be sold as hard ciders.

MISCELLANEOUS VINEGARS—LEGAL.

Laboratory No.	Classification.	Manufacturer or Retailer.	Acidity.
30036	Vinegar......	C. W. Bange, Indianapolis....................	7.01
30038	Vinegar......	C. W. Bange, Indianapolis....................	4.36
30039	Vinegar......	C. W. Bange, Indianapolis....................	4.48
30192	Vinegar......	Mr. Keith, Monroeville........................	5.12
30246	Vinegar......	Indianapolis Fancy Grocery, Indianapolis.......	4.76
30350	Vinegar......	B. H. Angelberk, Madison....................	4.17
30363	Vinegar......	A. C. Eccles, Greenwood......................	4.13
30379	Vinegar......	J. W. Wilson Co., Logansport.................	5.49
30426	Vinegar......	Frank Powell, Indianapolis....................	6.13
30427	Vinegar......	Frank Powell, Indianapolis....................	5.23
30433	Vinegar......	Schnull & Co., Indianapolis....................	4.14
30436	Vinegar......	Parsons-Scoville, Evansville..................	4.08
30721	Vinegar......	W. H. Doenges, Indianapolis..................	5.43
30722	Vinegar......	Sent in from Mishawaka......................	4.15
30825	Vinegar......	Grocers Supply Co., Indianapolis...............	9.78
30845	Pear Vinegar.	Kingan & Co., Indianapolis....................	5.83
30959	Vinegar......	L. C. Nicholson, Indianapolis..................	6.60
30983	Vinegar......	W. D. Huffman, Indianapolis..................	5.92
30994	Cider Vinegar.	R. C. Leonard, Indianapolis...................	4.89
31017	Vinegar......	Grocers Supply Co., Indianapolis...............	9.84

MISCELLANEOUS VINEGARS—ILLEGAL.

Laboratory No.	Classification.	Manufacturer or Retailer.	Acidity.	Remarks.
30037	Vinegar........	C. W. Bange, Indianapolis.....	.81	Acidity low.
30040	Vinegar........	F. W. Griese, Evansville......	4.26	Solids, ash low
30152	Vinegar........	G. I. Burton, Mitchell........	1.47	Acidity low.
30170	Vinegar........	J. Barnett, West Newton......	2.96	Acidity low.
30340	Cider Vinegar...	J. Wehener, Madison..........	3.83	Acidity low.
30343	Vinegar........	Sent in from Terre Haute.....	3.70	Acidity low.
30441	Distilled Vinegar	Peru Grocery Co., Peru.......	3.85	Acidity low.
30446	Vinegar........	J. H. Rickey, Monticello......	4.36	Solids low.
30460	Distilled Vinegar	A. M. Hirsch, Indianapolis....	3.90	Acidity low.
30541	Vinegar........	Sent in from Mishawaka......	4.20	Alkalinity low.
30584	Colored Distilled	Crown Bottling Co., Terre Haute....................	3.80	Acidity low.
30584a	Colored Distilled	Crown Bottling Co., Terre Haute....................	3.87	Acidity low.
30767	Vinegar........	Jacob Foltz, Evansville.......	3.18	Acidity low.
30984	Colored Distilled	W. D. Huffman, Indianapplois.	5.33	Mislabelled.
30995	Cider Vigenar...	John Vorwald, Columbus......	1.0	Aciditu low.
30996	Vinegar........	C. O. Wood, Terre Haute.....	.81	Acidity low.
30997	Vinegar........	W. H. Craig, Noblesville......	1.67	Acidity low.
31000	Vinegar........	W. E. Sayer, Indianapolis.....	.82	Acidity low.
31101	Vinegar........	W. E. Sayer, Indianapolis.....	1.44	Acidity low.
31113	Vinegar........	H. P. Leftwich, Indianapolis...	3.90	Acidity low.
31140	Vinegar........	C. B. Howland, Indianapolis...	3.30	Acidity low.
31180	Vinegar........	Lewis Michaels, Montgomery..	1.18	Acidity low.
31181	Vinegar........	Lewis Michaels, Montgomery..	2.40	Acidity low.
31182	Vinegar........	John F. Crane, Spencer.......	2.11	Acidity low.

MISCELLANEOUS FOOD PRODUCTS.

Fifty samples of food products of a miscellaneous character such as canned foods, yeast improvers, food preservatives, nuts, candies, fruit juices, etc., were examined. Eleven of the samples were classed as illegal either because of the presence of preservatives or because the character of the food was such that it was unfit for eating.

MISCELLANEOUS FOOD PRODUCTS.

Laboratory No.	Manufacturer or Retailer.	Classification.	Remarks.
29169	L. A. Wheeler, Princeton	Horseradish	Legal.
30032	Sent in from Washington	Pork	Legal.
30035	Sent in from Fort Wayne	Meat Preservative	Legal.
30153	Bartlett Tea & Coffee Co., Indianapolis	Tea	Legal.
30171	F. R. Olson, East Gary	Raspberry Flavor	Legal.
30197	Sent in from LaGrange	Canned Blackberries	Legal.
30213	Sent in from LaGrange	Canned Cherries	Legal.
30214	Sent in from LaGrange	Canned Peaches	Legal.
30230	Sent in from Brownstown	Horseradish	Legal.
30271	Sent in from Napanee	Coffee	Legal.
30274	Whitehead Bakery, Goshen	Nu Pro	Legal.
30275	Sent in from Plymouth	Nu Pro	Legal.
30320	Blanton Milling Co., Indianapolis	Yeast Improver	
30390	Sent in from Richmond	Prepared Mustard	Illegal; spoiled.
30390a	Eddie Lockwood, Indianapolis	English Walnuts	Illegal; stale.
30391	Sent in from Terre Haute	Buttermilk	Legal.
30392	Sent in from Marion	Meat Preservative	Illegal; sulphites.
30394	H. Haines, Indianapolis	Whipsit	Legal.
30412	Hoffman Bros., Muncie	Mince Meat	Legal.
30413	Swayzee Market, Marion	Lemon Substitute	Legal.
30425	Schnull & Co., Indianapolis	English Walnuts	Pass; 82.5 % Good.
30428	Wm. H. Block Co., Indianapolis	Goose Fat	Legal.
30441	Sent in from Wabash	Fresh Pork	Illegal; Cholera indicated.
30459	Jasper R. Sear, Muncie	Candy	Legal.
30461	W. N. Sutton, Princeton	Ham Preservative	Legal.
30554	Sidlinger, Shelbyville	Freeze-Em Pickle	Legal.
30558	The Crowley Co., Vincennes	Pork and Beans	Illegal; Unfit for food.
30599	Dilling & Co., Indianapolis	Chocolate Candy	Legal.
30626	Wm. H. Block Co., Indianapolis	Coca Cola Extract	Legal.
30662	Henry Nungesser, Richmond	Preservative	Illegal; sulphites.
30709	Sent in from Elkhart	Cake	Illegal.
20776	A. L. King, Indianapolis	Lemon Juice	Illegal.
30777	Donald Hollibaugh, Wolcottville	Coffee	Legal.
30786	Mr. Smith, Marion	Ham-O-Ream	Legal.
30846	Thos. W. Hiser, Michigan City	Peanut Oil	Legal.
30852	W. P. Colshier, Decatur	Crushed Cherries	Legal.
30853	W. P. Colshier, Decatur	Strawberry Syrup	Legal.
30854	W. P. Colshier, Decatur	Cherry Syrup	Legal.
30855	W. P. Colshier, Decatur	Vanilla Syrup	Legal.
30866	T. G. Hudson, Marion	Mustard	Illegal; Charcoal present.
30904	White River Creamery Co	Buttermilk	Legal.
30927	A. R. Kresler, Renssalaer	Dough	Legal.
30935	C. L. Shugart, Marion	Horseradish	Legal.
30936	W. A. Eurich, Anderson	Horseradish	Legal.
30948	Thos. W. Hiser, Michigan City	Peanut Oil	Legal.
30951	Mr. John Brownell, Brazil	Buttermilk	Illegal; In advance state fermentation.
31108	Sent in from Clinton	Fried Chicken	Legal.
31131	Sent in from Anderson	Candy	Legal.
31137	Sent in from Muncie	BakingPowder	Legal.
31220	Montgomery & Snyder, Brooks	Canning Compound	Legal.
31225	Wm. H. Block Co., Indianapolis	Cocoa	Legal.

REPORT

FROM THE

DRUG LABORATORY

REPORT FROM THE DRUG LABORATORY.

We have long since concluded that there was little profit to be gained for drug users by continued analyses of staple pharmaceuticals. The druggist is not interested in selling sub-standard preparations. His business is an ethical one, besides there is ordinarily little profit in diluting tincture of iodine, in cutting down the camphor content of spirits of camphor, of stocking his shelves with worthless lime water. The work of the laboratories has therefore been devoted largely to special studies of products sent in by physicians and of classes of goods of dubious character.

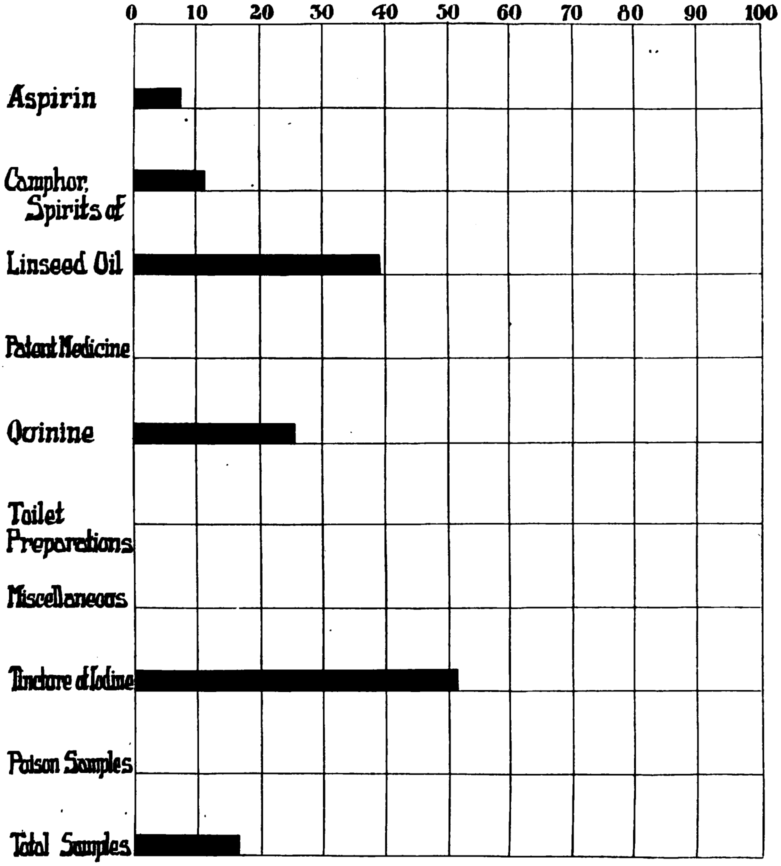
During the year 311 samples of drugs were examined of which 38 or 17.7% were adulterated.

RESULTS OF ANALYSIS OF DRUG SAMPLES FOR THE YEAR ENDING OCTOBER 1, 1915, TO OCTOBER 1, 1916.

Article.	Legal.	Illegal.	Total.	Per cent Adulteration.
Aspirin	137	12	149	8.0
Camphor, Spirits of	8	1	9	11.1
Linseed Oil	16	10	26	38.5
Patent Medicines	....	....	20	....
Quinine	3	1	4	25.0
Toilet Preparations	....	....	24	....
Miscellaneous	....	....	37	....
Tincture of Iodine	13	14	27	51.8
Samples Examiued for Poison	....	....	15	....
Total	177	38	311	17.7

PERCENTAGE of ADULTERATION of DRUGS ANALYZED in INDIANA

1916



ASPIRIN TABLETS.

All drugs are scarce when prices are high, but those manufactured in Germany are unobtainable. Aspirin, a proprietary product, reached such high prices that peddlers saw an opportunity to sell milk sugar and citric acid in the form of tablets as aspirin. A veritable flood of fake aspirin issued from the impromptu laboratories of the get-rich-quick pharmacists.

In a study of the aspirin situation in Indiana 149 samples were collected. Of this number 12 were adulterated. The druggists who sold the samples were arrested and fined. After this investigation the aspirin peddlers left the state.

ASPIRIN—LEGAL.

Laboratory No.	Manufacturer or Retailer.	Grains Per Tablet		Remarks.
		Label.	Found.	
30003	P. G. Klinkenberg, Kendallville	5.00	5.27	
30004	A. R. Otis, Kendallville	5.00	5.07	
30008	Henry Fischer, Kendallville	5.00	5.21	
30009	J. D. Snyder, Kendallville	5.00	5.18	
30353	Board of Pharmacy, Indianapolis	5.00	4.83	
30357	Pioneer Pharmacy, Kokomo	5.00	4.69	Slightly low.
30612	E. Longstreet, Mishawaka	5.00	4.90	
30613	Freut & Thomas, Mishawaka	5.00	4.96	
30614	E. C. Went & Co., Mishawaka	5.00	5.05	
30629	R. W. Stormont, Oakland City	5.00	5.00	
30632	Peoples Drug Store, Mishawaka	5.00	4.66	
30366	W. H. Hickerson, Warren	5.00	5.00	
30367	The Wayne Pharmacy, Fort Wayne	5.00	4.97	
30421	Sent in from Arcadia	5.00	....	Salicylic acid absent.
30615	W. Pensiner, Indianapolis	5.00	5.21	
30617	M. Cornell, Rushville	5.00	5.07	
30618	Johnson, Druggist, Rushville	5.00	5.15	
30619	Hargrove & Mullin, Rushville	5.00	5.15	
30620	Fox Bros., Rushville	5.00	5.04	
30621	Wolcott, Rushville	5.00	5.12	
30623	Chas. Mason, Dugger	5.00	4.69	Slightly low.
30624	Hamilton Pharmacy, Dugger	5.00	4.75	
30625	Beatty & Walters, Sullivan	5.00	5.02	
30626	Barnett Pharmacy, Sullivan	5.00	4.78	
30627	Robert Sisson, Oakland City	5.00	5.05	
30628	J. C. Osborn, Oakland City	5.00	5.13	
30633	Haag Drug Co., Indianapolis	5.00	5.07	
30634	Hook Drug Co., Indianapolis	5.00	5.15	
30636	Pearson's Drug Co., Indianapolis	5.00	5.07	
30637	Haag Drug Co., Indianapolis	5.00	5.04	
30640	Francis Pharmacy, Indianapolis	5.00	5.12	
30642	Clark & Cade, Indianapolis	5.00	5.04	
30649	Jackson Drug Co., Indianapolis	5.00	5.12	
30650	State House Pharmacy, Indianapolis	5.00	5.24	
30652	Star Pharmacy, Indianapolis	5.00	5.07	
30653	Hook Drug Co., Indianapolis	5.00	5.19	
30654	Farver Pharmacy, Indianapolis	5.00	5.27	
30659	S. J. Huder, Indianapolis	5.00	5.21	
30692	Applegate Drug Co., South Bend	5.00	5.15	
30693	O. Bastian, South Bend	5.00	4.83	
30695	Coonley Drug Co., South Bend	5.00	5.24	
30698	Weiles Drug Co., Bloomington	5.00	5.00	
30702	T. J. Penwood, Bloomington	5.00	5.05	
30706	J. C. Vermilga, Bloomington	5.00	4.89	
30710	R. J. Bryant, Bloomington	5.00	4.94	
30716	Owl Drug Store, Bedford	5.00	5.05	
30717	B. Williams, Bedford	5.00	5.07	
30722	Dodd & Douthitt, Bedford	5.00	5.10	

ASPIRIN—LEGAL—Continued.

Laboratory No.	Manufacturer or Retailer	Grains Per Tablet		Remarks.
		Label.	Found.	
30724	Beddor & Chrisler, Bedford	5.00	4.83	
30728	A. H. Miller, Huntingburg	5.00	5.05	
30734	Sherrod & Lindley Co., West Baden	5.00	4.66	
30738	Miller and Moore, West Baden	5.00	4.56	
30739	Homestead Drug Store, West Baden	5.00	4.56	
30743	E. Mayrs, New Albany	5.00	4.88	
30744	McDonald-Stockdell Co., New Albany	5.00	5.05	
30750	W. Pfan, Jeffersonville	5.00	5.00	
30751	B. Doolittle, Jeffersonville	5.00	4.83	
30767	H. Zimmer, Indianapolis	5.00	5.04	
30768	Ed. Stucky, Indianapolis	5.00	4.64	
30769	Clark & Cade, Indianapolis	5.00	5.02	
30771	H. E. Frauer Co., Indianapolis	5.00	4.86	
30772	Ed. Hampton, Terre Haute	5.00	5.02	
30773	Bauer Drug Co., Terre Haute	5.00	5.00	
30774	Valentines, Terre Haute	5.00	4.69	
30775	H. C. Randall, Terre Haute	5.00	4.97	
30776	J. D. King Co., Terre Haute	5.00	4.91	
30777	Buntin Drug Co., Terre Haute	5.00	5.24	
30778	M. Jack, Terre Haute	5.00	4.97	
30779	Herbers Drug Store, Terre Haute	5.00	5.27	
30780	J. Shandey, Terre Haute	5.00	5.24	
30782	Nuikam, Terre Haute	5.00	5.02	
30783	R. Reeder, Terre Haute	5.00	5.15	
30784	New Central Pharmacy, Terre Haute	5.00	4.97	
30785	J. Cook, Terre Haute	5.00	4.83	
30786	A. Austin, Terre Haute	5.00	5.19	
30788	Batey & Walters, Sullivan	5.00	4.61	
30789	Bennetts Drug Co., Sullivan	5.00	5.08	
30790	John Smock & Son, Sullivan	5.00	4.91	
30791	E. E. Stewart, Indianapolis	5.00	4.91	
30792	Case Bros., Indianapolis	5.00	5.02	
30793	C. G. Mueller, Indianapolis	5.00	4.97	
30795	Clay & Emmons, Indianapolis	5.00	5.02	
30796	J. R. Phillips Co., Indianapolis	5.00	4.97	
30797	A. B. Carr, Indianapolis	5.00	4.80	
30798	W. Stedfeld, Indianapolis	5.00	5.13	
30800	Crescent Pharmacy, Indianapolis	5.00	5.00	
30806	F. J. Miller, Fort Wayne	5.00	5.13	
30807	E. O. Ringwalt, Fort Wayne	5.00	5.00	
30808	Jacob Bill, Fort Wayne	5.00	5.13	
30809	D. F. Micahelis, Fort Wayne	5.00	5.13	
30810	F. W. Miller, Fort Wayne	5.00	5.30	
30811	Philip Koehlinger, Fort Wayne	5.00	4.86	
30812	C. F. Regedons, Fort Wayne	5.00	5.00	
30801	F. Keekam, Indianapolis	5.00	4.95	
30826	D. P. Campbell Bros., Muncie	5.00	5.12	
30833	Walter Schumaker, Muncie	5.00	5.07	
30864	Schultz & Bowman, Lafayette	5.00	5.07	
30865	Hogan Drug Co., Lafayette	5.00	4.89	
30866	Wells-Yeager Best Co., Lafayette	5.00	4.87	
30870	B. Drees, Lafayette	5.00	5.04	
30871	Bartlett Drug Co., Lafayette	5.00	4.87	
30872	S. G. Silverberg, Muncie	5.00	5.09	
30873	Chas. Thornberg, Muncie	5.00	5.15	
30874	Hook Drug Co., Indianapolis	5.00	5.12	
30875	Smock & Gardner, Lafayette	5.00	5.04	
30876	Kienly Drug Store, Lafayette	5.00	5.02	
30878	E. P. Whinery, Muncie	5.00	5.04	
30879	Wm. Elliott, Muncie	5.00	5.12	
30880	Peoples Drug Co., Muncie	5.00	5.18	
30963	E. W. Brandt, Fort Wayne	5.00	4.83	
30966	A. W. F. Month, Fort Wayne	5.00	5.32	
30967	J. J. Brink & Son, Fort Wayne	5.00	5.02	
30968	G. F. Miller, Fort Wayne	5.00	5.19	
30969	Pickle & Wagner, Fort Wayne	5.00	4.75	
30970	C. H. Albersmeyer, Fort Wayne	5.00	5.05	
30971	Jos. A. Sigl, Fort Wayne	5.00	5.19	
30972	O. M. Goss, Huntington	5.00	4.78	
30973	Howard Mueller, Huntington	5.00	5.52	
30974	Bradley Bros., Huntington	5.00	4.75	
30975	G. A. Clapsattle, Fort Wayne	5.00	5.65	
30976	Spiegel Bros., Fort Wayne	5.00	4.69	
30977	A. W. Kothn, Fort Wayne	5.00	5.16	

ASPIRIN—LEGAL—Continued.

Laboratory No.	Manufacturer or Retailer.	Grains Per Tablet		Remarks.
		Label.	Found.	
30978	Herman Bill, Fort Wayne	5.00	5.08	
30979	H. W. Mienzen, Fort Wayne	5.00	5.32	
30980	J. D. Lewis, Fort Wayne	5.00	5.10	
30981	A. C. Locke, Fort Wayne	5.00	5.00	
30982	Meyers Bros., Fort Wayne	5.00	4.86	
30983	Woodworths, Fort Wayne	5.00	5.35	
30984	A. C. Bechstem, Huntington	5.00	5.10	
30985	Chas. F. Carr, Huntington	5.00	5.16	
30988	Justice Lovett, Huntington	5.00	5.05	
30989	Mellium & McClellan, Huntington	5.00	5.02	
30990	Stevens & Dunbould, Huntington	5.00	5.30	
30993	H. B. McCord, Auburn	5.00	5.09	
30995	W. C. Kentening, Auburn	5.00	5.02	
30997	Ashton Stamon, Auburn	5.00	5.09	
31001	Peoples Drug Co., Fort Wayne	5.00	5.24	

ASPIRIN—ILLEGAL.

Laboratory No.	Manufacturer or Retailer.	Grains Per Tablet		Remarks.
		Label.	Found.	
30345	Sent in from Markleville	5.00	None	No aspirin present.
30644	J. W. Stokes, Indianapolis	5.00	None	No aspirin present.
30646	Huder Drug Co., Indianapolis	5.00	None	No aspirin present.
30696	American Drug Co., South Bend	5.00	None	Acetanilid present.
30697	L. Landen Co., South Bend	5.00	None	Starch present.
30730	J. E. Veach, Oakville	5.00	None	No aspirin present.
30770	F. Mueller, Indianapolis	5.00	None	Acetanilid present.
30781	West Side Pharmacy, Terre Haute	5.00	None	Starch present.
30787	J. C. Gillis, Terre Haute	5.00	None	Starch present.
30794	E. F. Smith, Indianapolis	5.00	None	Acetanilid present.
30799	C. Heitkam, Indianapolis	5.00	None	Acetanilid present.
30961	Deam & Spivey, Deactur	5.00	None	No aspirin present.

LINSEED OIL.

Twenty-six samples of linseed oil were examined of which 10 or 38.5% were adulterated, in every case by the addition of mineral oil. These samples were examined under the Linseed Oil law, the enforcement of which is invested with the State Board of Health.

LINSEED OIL.

Laboratory No.	Manufacturer or Retailer.	Where Collected.	Saponification Number.	Hexabromides.	Remarks.
30232	By-Lo Stores Co	Muncie	189.7	27.7	Legal.
30233	By-Lo Stores Co	Muncie	192.2	26.6	Legal.
30300	O. L. Jones	Greencastle	192.3	28.4	Legal.
30358	Sent in from	Madison	135.7	....	Illegal.
30359	Sent in from	Madison	103.0	....	Illegal.
30360	Sent in from	Madison	133.6	....	Illegal.
30361	Sent in from	Madison	102.8	....	Illegal.
30361a	Sent in from	Madison	136.5	18.3	Illegal.
30362	Sent in from	Madison	140.8	....	Illegal.
30362a	Sent in from	Evansville	188.1	25.1	Legal.
30363	Sent in from	Madison	119.1	....	Illegal.
30712	Omer Havens	Indianapolis	186.0	25.52	Legal.
30724	George Geisling	Indianapolis	190.9	39.40	Legal.
30725	Sent in from	Madison	183.6	39.45	Legal.
30726	Sent in from	Madison	185.3	43.11	Legal.
30727	Sent in from	Madison	183.6	42.35	Legal.
30728	Sent in from	Madison	183.6	41.11	Legal.
30729	M. J. Thompson	Indianapolis	188.6	43.58	Legal.
30759	Indianapolis Paint & Color Co	Indianapolis	181.0	32.4	Legal.
30760	Walter Margason	Noblesville	122.5	....	Illegal.
30858	Roy Lively	Heltonville	68.2	....	Illegal.
31078	F. M. Whitesell, Hagerstown	Hagerstown	192.3	36.2	Illegal.
31082	H. S. Harriman	Indianapolis	192.3	31.68	Legal.
31092	Mack Thomson	Indianapolis	192.3	36.4	Legal.
31093	Mack Thomson	Indianapolis	190.9	24.14	Legal.
31215	C. H. True	Indianapolis	186.2	33.7	Legal.

The illegal samples of linseed oil contain mineral oil.

PATENT MEDICINES.

Twenty samples of patent medicine were examined and the results are shown in the following table:

PATENT MEDICINES.

Laboratory No.	Classification.	Manufacturer or Detailer.	Remarks.
30318	Cordial	Frazier Bros., Kokomo	The official mixture of sassafras and opium.
30321	Rawleigh's Pain Relief	Miller Davis, Terre Haute	Apparently, this is an extract of capsicum, alcohol and water.
30322	Rawleigh's Cough Syrup	Miller Davis, Terre Haute	From the ordor and taste, this preparation is probably the ordinary cough syrup that contains white pine, wild cherry, Balm of Gilead Buds, spikenard root, etc.
30323	Gingerine	Frazier Bros., Kokomo	Apparently a weak tincture of ginger.
30326	Rawleigh's Anti Pain Oil	Miller Davis, Terre Haute	A simple solution containing alcohol, oil of mustard and oil of wintergreen.
30327	Rawleigh's Pain Relief	Miller Davis, Terre Haute	A simple solution containing alcohol, chloroform, oil of cinnamon and camphor.
30350	Liniment	Sent in from Marion	This is a solution of wood tar in gasoline.
30420	Amolex	Freel and Mason, Marion	Salicylic acid, oil of wintergreen, alcohol and water present.
30467	Cough Syrup	Sent in from Indianapolis	Apparently this is a solution of tar and sugar containing some chloroform.
30710	Cough and Cold Remedy	John Bernhart, Fort Wayne	Formula submitted: Hops, sugar and vinegar.
30711	Marlix	Marlix Company, Fort Wayne	Formula submitted: Bicarbonate of Soda, Aromatic Spirit of Ammonia, Spirit of Chloroform, Tincture Gentian Compound and Glycerine.
30714	Cough Syrup	The Tar Ex Co., Fort Wayne	Formula submitted: Syrup, oil of sassafras and oil of tar.
30744	Ointment	Sent in from Indianapolis	This salve is apparently nothing but perfumed petrolatum.
30751	Chlorozone	Russell Wilson, Indianapolis	This is the ordinary emulsion of cresol in soap and water.
30752	Foot Powder	C. T. Colclesser, Fort Wayne	Boric acid and salicylic acid present.
30753	Obesity Pills	Sent in from Indianapolis	Principally aloes.
30754	Obesity Pills	Sent in from Indianapolis	These tablets apparently consist of extract of bladderwrack.
30882	Tobacco Cure	Sent in from Indianapolis	This is a dilute solution of silver nitrate.
30930	Cold Capsules	Sent in from Indianapolis	The contents of these are essentially quinine
30931	Cough Syrup	Sent in from Indianapolis	Apparently, this is the official compound syrup of White Pine with the chloroform and morphine omitted.

QUININE.

Laboratory No.	Sent in from.	Remarks.
30356	Terre Haute	Sample does not comply with U. S. P.
30466	Lafayette	This sample responds to all U. S. P. tests for quinine.
30928	Indianapolis	The contents respond to all the U. S. P. tests for quinine.
31087	Indianapolis	These capsules are entirely aspirin.

SPIRIT OF CAMPHOR.

Laboratory No.	Manufacturer or Retailer.	Per Cent U. S. P.	Remarks.
27914	J. V. Barbor & Co., Farmersburg		Misbranded. Illegal.
30714	Owl Drug Store, Bedford	117.5	Legal.
30720	B. Williams, Bedford	108.3	Legal.
30728	Dodd & Douthitt, Bedford	106.6	Legal.
30727	Beddor-Christler, Bedford	105.8	Legal.
30736	West Baden Hotel Pharmacy, West Baden	103.3	Legal.
30737	Miller and Moore, West Baden	107.5	Legal.
30749	P. Geisler, New Albany	110.0	Legal.
30754	F. Mason, Jeffersonville	105.0	Legal.

TINCTURE OF IODINE.

Laboratory No.	Manufacturer or Retailer.	Per Cent U. S. P.	Remarks.
30663	L. Kramer, Michigan City	99.2	Below standard.
30667	Ohming Drug Store, Michigan City	109.0	Legal.
30668	W. Woodson, Michigan City	91.1	Below standard.
30669	W. Zahm, Michigan City	85.0	Below standard.
30672	E. Moran, Michigan City	97.5	Below standard.
30676	Lion Drug Store, Laporte	92.8	Below standard.
30678	C. E. Luedtke, Laporte	105.3	Legal.
30680	Red Cross Pharmacy, Laporte	86.0	Below standard.
30682	Drug Craft, Laporte	104.2	Legal.
30684	Weiler Drug Co., Elkhart	111.3	Legal.
30686	Housworth Bros., Elkhart	88.7	Below standard.
30688	Clem Drug Co., Elkhart	109.7	Legal.
30690	L. Buchman, Elkhart	101.2	Legal.
30699	Wiles Drug Co., Bloomington	102.3	Legal.
30703	T. J. Penrod, Bloomington	97.2	Below standard.
30707	J. C. Vermilga, Blomington	99.0	Below standard.
30712	R. J. Bryant, Bloomington	100.9	Legal.
30715	Owl Drug Store, Bedford	93.5	Below standard.
30718	B. Williams, Bedford	102.3	Legal.
30726	Beddor & Chrisler, Bedford	100.9	Legal.
30730	A. H. Miller, Huntingburg	95.4	Below standard.
30732	O. Hancock, French Lick	97.2	Below standard.
30733	Sherrod & Lindley, West Baden	85.8	Below standard.
30735	W. Baden Springs Hotel, West Baden	106.0	Legal.
30741	City Drug Store, French Lick	100.9	Legal.
30747	Callahan Drug Store, New Albany	107.5	Legal.
30752	B. Doolittle, Jeffersonville	98.3	Below standard.

TOILET PREPARATIONS.

The results of the analyses of 24 samples of toilet preparations purchased for the most part at five and ten cent stores are shown in the following table.

TOILET PREPARATIONS.

Laboratory No.	Article.	Manufacturer or Retailer.	Remarks.
30191	Witch Hazel and Lemon Cream	Craft and Co., Indianapolis	A tragacanth jelly flavored with lemon.
30192	Tar Shampoo	Craft and Co., Indianapolis	A solution of soft soap and tar.
30193	Florida Water	Craft and Co., Indianapolis	Wood alcohol absent.
30194	Cucumber Cream	Craft and Co., Indianapolis	A gum tragacanth jelly.
30195	Bay Rum Lotion	Craft and Co., Indianapolis	Wood alcohol absent.
30196	Almond and Benzoin Cream	Craft and Co., Indianapolis	A tragacanth jelly flavored with almonds.
30197	Hair Tonic	Craft and Co., Indianapolis	Wood alcohol absent.
30315	Florida Water	Kresge 5 & 10 Cent Store, Indianapolis	Wood alcohol absent.
30316	Liquid Shampoo	Kresge 5 & 10 Cent Store, Indianapolis	A colored solution of soft soap.
30317	Violet Witch Hazel	Kresge 5 & 10 Cent Store, Indianapolis	Wood Alcohol Absent.
30318	Almond Cream	Kresge 5 & 10 Cent Store, Indianapolis	A tragacanth jelly flavored with almond.
30320	Hair Tonic	Kresge 5 & 10 Cent Store, Indianapolis	Wood alcohol absent.
30321	Cucumber Cream	Kresge 5 & 10 Cent Store, Indianapolis	A gum tragacanth jelly.
30322	Bay Rum Lotion	Kresge 5 & 10 Cent Store,	Wood alcohol absent.
30323	Witch Hazel	Craft and Co., Indianapolis	Wood alcohol absent.
30324	Toilet Water	Kresge 5 & 10 Cent Store, Indianapolis	Perfumed Water.
30325	Cream of Lemon	Kresge 5 & 10 Cent Store, Indianapolis	A gum tragacanth jelly flavored with lemon.
30326	Toilet Water	Craft and Co., Indianapolis	Simply perfumed water.
30327	Liquid Shampoo	Craft and Co., Indianapolis	Colored solution of soft soap.
30355	Face Powder	Sent in from Indianapolis	No adulterants present.
30470	Vanishing Cream	Sent in from Indianapolis	An emulsion of stearic acid, soap and water.
30483	Massage Cream	Sent in from Indianapolis	A simple cocoa butter ointment.
30758	Massage Powder	Sent in from Indianapolis	Sodium carbonate, alum and red pepper present.
30857	Hair Straightner	Dr C. A. Lucas, Indianapolis	A pasty mixture of soap and caustic soda.

MISCELLANEOUS DRUG SAMPLES.

Thirty-seven miscellaneous drugs in almost every case sent in by physicians were examined during the year. The results of the analyses are shown on the following table:

MISCELLANEOUS DRUG SAMPLES.

Laboratory No.	Article.	Manufacturer or Retailer.	Remarks.
29061	Alcohol	Sent in from Connersville	Legal.
30199	Unknown Substance	Sent in from Indianapolis	Black granular substance with odor of opium. Extract gives all tests for morphine
30201	Unknown Powder	Sent in from Indianapolis	Sample is morphine salt.
30239	Cutting Oil	Warner Gear Co., Muncie	No organisms present.
30240	Cutting Oil	Warner Gear Co., Muncie	Staphlococcus pyogenes aureas present.
30319	Morphine Tablets	London Drug Co., South Bend	Atropine absent.
30338	Soap	Sent in from Mishawaka	No foreign ingredients detected.
30351	Unknown Powder	Dr. C. C. Ray, Arcadia	No arsenic, Paris green nor copper present.
30352	Unknown Solution	J. H. Prather, Sandborn	No heavy metals nor alkaloids present.
30368	Bacilli Kill	White River Creamery Co., Muncie	A solution of chlorine.
30599	Prescription	Sent in from Whitestown	Bromides present. Prescription calls for ammonium chloride, but no bromides.
30733	Roach Paste	Sent in from North Vernon	The essential ingredient of this preparation is phosphorus.
30735	Tablets	Sent in from Whitestown	Tablets are apparently composed of magnesium salicylate with trace of acetic acid.
30736	Insect Powder	Sent in from Center	Naphthalene and Sulphur present.
30737	Tartar Emetic	Sent in from Carmel	Complies with U. S. P. requirements.
30742	Golden Seal	Sent in from Inwood	This powder is hydrastis.
30745	Unknown Mixture	Sent in from Odon	Appears to be suspension of barium sulphate in solution of zinc sulphate.
30746	Veronal Tablets	Sent in from Indianapolis	These tablets are true veronal and are legal.
30750	Unknown Powder	Sent in from Lafayette	Entirely arsenic trioxide.
30848	Cream of Tartar	Wm. H. Block Co., Indianapolis	Legal.
30883	Novocain Tablets	Sent in from Bunker Hill	Tablet gives all the reactions for novocain and none for quinine as suspected.
30926	Paste Board	Sent in from Cayuga	Alkaloids absent.
20927	Codein Tablets	Sent in from Markleville	99 per cent. pure. Legal.
30928	Fly poison	Sent in from Pekin	Apparently powdered pyrethrum of the U. S. P.
30930	Golden Seal	Sent in from Lingood	Responds to all U. S. P. tests.
30931	Unknown Solution	Sent in from Richmond	Apparently paregoric, although sample is too small for identity.
31080	Weed Killer	Sent in from Fort Wayne	A strong solution of tartar emetic.
31081	Tablet	Sent in from Walton	Hypodermic morphine tablets.
31086	Unknown Solution	Sent in from Princeton	A solution of saponifiable oil in ethyl acetate.
31088	Salve	Sent in from Princeton	Apparently nothing but vaseline.
31090	Salicylic Acid	Sent in from Madison	Complies with all U. S. P. requirements.
31091	Mercuric Chloride Tablets	Sent in from Elkhart	These tablets contain mercuric chloride.
31138	Cream of Tartar	Wm. H. Block Co., Indianapolis	Sample is pure.
31167	Unknown Solution	Sent in from Eaton	Potassium bromide and sodium bromide present.
31168	Prescription	Sent in from Indianapolis	Mixture corresponds as closely to written prescription as possible. There is a slight excess of mercuric chloride, but this amount will cause no trouble.
31217	Mineral Oil	John A. Brown, Auburn Junction	This oil contains no impurities and is true to name.
31228	Sodium Benzoate	Star Canning Co., Austin	Sample is pure.

FOOD AND DRUG SAMPLES EXAMINED FOR POISON.

Although the State Board of Health is not interested in toxicological work and makes no analysis except as a matter of courtesy where the criminal use of poison is expected, we have during the year examined 15 samples of foods and drugs to determine the presence or absence of poison. In but one case, a sample of whiskey, was any poison detected. Samples of buttermilk, salt pork, whiskey, cake, candy and bread showed neither arsenic, strychnine or other poisons, although the persons who requested the examination were confident that the products were poisoned usually with criminal intent.

FOOD AND DRUG SAMPLES EXAMINED FOR POSION.

Laboratory No.	Article.	Sent in from.	Remarks.
30219	Buttermilk	Summitville	No arsenic nor strychnine present.
30231	Salt Pork	Oxford	No arsenic nor heavy metals present.
30598	Whiskey	Indianapolis	No poisons detected.
30600	Candy	Lewis	No arsenic nor alkaloids present.
30734	Candy	Indianapolis	No strychnine present.
30738	Cake	Brooklyn	No arsenic nor alkaloids present.
30743	Unknown solution	Warsaw	No arsenic nor alkaloids present.
30747	Sheep's Stomach	Odon	Zinc present.
30749	Contents of Stomach	Madison	No arsenic nor alkaloids present.
30761	Candy	Hartford City	No arsenic nor alkaloids present.
31077	Whiskey	Rushville	Strychnine present.
31079	Bread	Laporte	No poison detected.
31169	Candy	Indianapolis	Arsenic and alkaloids absent.
31210	Chicken Feed	Aurora	No arsenic nor alkaloids present.
31211	Candy	Pierceton	No arsenic nor alkaloids present.

PROSECUTIONS.

Sixty-three prosecutions were filed during the year for violation of the pure food and sanitary food laws. In every case a conviction was obtained. Twenty-five of the cases involved the sale of meats containing starch and sulphites. Five dealers were prosecuted for exposing candies. One baker plead guilty to exposing cakes. Three dairymen were fined for selling dirty milk, two for milk containing added water, one for milk below standard in fat and three for handling milk under unsanitary conditions. Two dealers were fined for selling cold stored eggs as fresh. Three grocers plead guilty to selling illegal ciders and one dealer paid a fine for having in his possession jam containing benzoate of soda.

The department files but few cases for violation of the laws believing that the public court is the last place in which to conduct a pure food or sanitary campaign. The uniform success which attends its appearance in the courts is gratifying for it establishes the fact that judges are in sympathy with the principles which prompted the legislation.

The list which follows includes only the prosecutions filed by inspectors of the departments. Many cases involving a violation of the pure food or sanitary food law was successfully handled by local officials.

The total amount of fines and costs levied during the year amounted to $1,315.25.

TABLE SHOWING CHARACTER AND NUMBER OF CASES.

Character	*Number*
Adulterated Oysters	2
Exposed Cakes	1
Exposed Candies	5
Dirty Milk	3
Milk Containing Added Water	2
Milk Below Standard	1
Milk Handled Under Unsanitary Conditions	3
Maintaining Unsanitary Conditions	4
Meats Containing Starch and Sulphites	25
Misbranded Bread	1
Misbranded Drugs	9
Misbranded Eggs	2
Selling Illegal Ciders	3
Selling Jam Containing Benzoate of Soda	1
Selling Unwholesome Meat	1
Total	63

LIST OF PROSECUTIONS FROM OCTOBER 1, 1915, TO OCTOBER 1, 1916.

County.	Name and Address of Defendant.	Why Prosecuted.	Date of Trial.	Final Disposition.
Allen	Peter Echrich, Fort Wayne	Selling hamburger containing sulphites	2– 4–16	Fined $20.00.
Allen	Fred Eckert, Fort Wayne	Selling hamburger containing sulphites	2– 4–16	Fined $20.00.
Allen	Fort Wayne Beef Co., Fort Wayne	Selling hamburger containing sulphites	2– 4–16	Fined $20.00.
Allen	Sam Heller, Fort Wayne	Selling hamburger containing sulphites	2– 4–16	Fined $20.00.
Allen	Lorenz & Harlsham, Fort Wayne	Selling sausage containing sulphites	2– 4–16	Fined $20.00.
Allen	National Meat Market, Fort Wayne	Selling sausage containing sulphites	2– 4–16	Fined $20.00.
Allen	Joseph Netterfield, Fort Wayne	Selling sausage containing sulphites	2 –4–16	Fined $20.00.
Allen	Frank Parrott, Fort Wayne	Selling sausage containing sulphites	2– 4–16	Fined $20.00.
Allen	Herman Scheele, Fort Wayne	Selling sausage containing sulphites	2– 4–16	Fined $20.00.
Allen	L. M. Stoffel, Fort Wayne	Selling hamburger containing sulphites	2– 4–16	Fined $20.00.
Allen	L. M. Stoffel, Fort Wayne	Selling sausage containing sulphites	2– 4–16	Fined $20.00.
Allen	L. R. Welker, Fort Wayne	Selling hamburger containing sulphites	2– 4–16	Fined $20.00.
Blackford	George E. Rapp, Hartford City	Selling meat containing sulphites	3–31–16	Fined $17.70.
DeKalb	E. E. Clark, Garrett	Selling hamburger containing sulphites	12– 8–15	Fined $18.30.
DeKalb	Ross and Hays, Garrett	Selling hamburger containing sulphites	12– 8–15	Fined $18.30.
Delaware	Walter Catron, Muncie	Selling milk containing added water	7–18–16	Fined $20.00.
Elkhart	M. Shookman, Goshen	Selling hamburger containing sulphites	2–15–16	Fined $20.00.
Elkhart	Peter Polezones, Goshen	Selling exposed candy	1– 7–16	Fined $20.00.
Elkhart	E. J. Sumtiener, Goshen	Selling exposed candy	1– 7–16	Fined $20.00.
Grant	Wilson J. Curfman, Marion	Operating under insanitary conditions	7–23–16	Fined $20.00.
Grant	Martin L. Johnson, Marion	Selling meat containing sulphites	3–22–16	Fined $20.00.
Greene	D. B. Rush, Bloomfield	Selling misbranded drug	10–12–15	Fined $31.55.
Huntington	John Black, Warren	Selling meat containing sulphites	3–20–16	Fined $17.00.
Jefferson	John W. Morrow, Madison	Selling milk below standard and containing dirt	12–15–15	Fined $19.00.
Johnson	Johnson County Serum Co., Franklin	Selling unwholesome meat	10– 2–15	Fined $15.00.
Knox	Lawrence Little, Vincennes	Selling dirty milk	11–19–15	Fined $20.00.
Lake	Wm. Ladra, Gary	Returning dirty milk cans unwashed	3–29–16	Fined $23.10.
Lake	Wubich & Yonanvich, Gary	Returning dirty milk cans unwashed	3–29–16	Fined $23.10.
Lake	Spirodn Comanoitz, Gary	Maintaining a nuisance—dirty restaurant	3–29–16	Fined $23.10.
Lake	Diamond Grocery Co	Selling meat containing sulphites	....	Case continued indefinitely.
Lake	Independent Meat Market, East Chicago	Selling hamburger containing sulphites	3–28–16	Fined $22.50.
Lake	Sam Peters, Gary	Maintaining an unsanitary restaurant	11–10–15	Fined $23.00.
Lake	Ben Reich, Gary	Selling cold storage eggs improperly stamped	11–11–15	Fined $23.00.
Marion	Dick Crowe, Indianapolis	Selling illegal cider	9– 6–16	Fined $20.00.
Marion	W. R. Lutler, Indianapolis	Selling illegal cider	9– 6–16	Fined $20.00.
Marion	William Ruthart, Indianapolis	Using unsanitary drinking glasses	9– 8–16	Fined $20.00.
Marion	John Smith, Indianapolis	Selling illegal cider	9– 6–16	Fined $20.00.
Marion	Sam Davis, Indianapolis	Selling misbranded aspirin	2–21–16	Fined $22.50.
Marion	Henry Huder, Indianapolis	Selling misbranded aspirin	2–17–16	Fined $22.50.

LIST OF PROSECUTIONS FROM OCTOBER 1, 1915, TO OCTOBER 1, 1916—Continued.

County.	Name and Address of Defendant.	Why Prosecuted.	Date of Trial.	Final Disposition.
Marion	F. Mueller, Indianapolis	Selling misbranded aspirin	2–14–16	Fined $22.50.
Marion	E. F. Smith, Indianapolis	Selling misbranded aspirin	2– 2–16	Fined $22.50.
Marion	J. F. Stokes, Indianapolis	Selling misbranded aspirin	2– 2–16	Fined $22.50.
Marion	Bills & Boettcher, Indianapolis	Selling misbranded eggs	12–15–15	Fined $24.50.
Marion	George Kraft & Co., Indianapolis	Selling exposed candy	12–17–15	Fined $24.50.
Marion	C. Heitkam, Indianapolis	Selling misbranded aspirin	1–31–16	Fined $22.50.
Marion	George Kutche, Indianapolis	Exposing cakes at soda fountain	1–22–16	Fined $21.00.
Marion	Michael Manella, Indianapolis	Selling exposed candies	1–15–16	Fined $23.00.
Marion	Hattie Egan, Indianapolis	Selling adulterated oysters	7– 7–16	Fined $22.00.
Marion	George Nicholson, Indianapolis	Selling adulterated oysters	7– 7–16	Fined $22.00.
Marion	E. F. Monn & Son, Indianapolis	Selling jam containing benzoate	3–25–16	Fined $27.50.
Noble	George J. Clark, Kendallville	Selling hamburger containing sulphites	12– 8–15	Fined $20.00.
Noble	J. S. Clark, Kendallville	Selling hamburger containing sulphites	12– 8–15	Fined $20.00.
Noble	Swartz & Shook, Kendallville	Selling hamburger containing sulphites	12– 8–15	Fined $20.00.
St. Joseph	A. Mayerhofer, South Bend	Selling plain bread for gluten	10– 1–15	Fined $20.00.
Vanderburg	David Schlag, Evansville	Transferring milk in dusty street	11– 5–15	Fined $20.00.
Vanderburg	David Schlag, Evansville	Selling dirty milk	11– 5–15	Fined $20.00.
Vanderburg	Thomas Shields, Evansville	Selling watered milk	2–23–16	Fined $18.50.
Vermillion	Smith Grocery Co., Clinton	Selling hamburger containing sulphites	1–25–16	Fined $18.80.
Vermillion	Alice Tutwiler, Clinton	Selling exposed candies	1–25–16	Fined $18.80.
Vigo	J. C. Gillis, Terre Haute	Selling misbranded aspirin	1–26–16	Fined $21.00.
Vigo	S. Locke, Terre Haute	Selling misbranded aspirin	1–21–16	Fined $21.00.
Vigo	C. M. Mooney, Terre Haute	Selling sausage containing starch	1–27–16	Fined $21.00.
Vigo	John Rassel, Terre Haute	Selling weinerwurst containing starch	1–27–16	Fined $21.00.

SANITARY INSPECTIONS.

The value of the work of the sanitary inspector who visits the grocery store and butcher shop becomes more pertinent every year. The work which when first undertaken was viewed with disfavor by the proprietor whose shop was being inspected, and which aroused little attention among consumers, is now accepted as a necessary feature of the manufacture and distribution of food. The manufacturer expects his shop to be visited and is proud of the opportunity given him to show the up-to-date methods he uses, the superior character of his equipment and his advanced ideas in matters of cleanliness and sanitation.

In the enforcement of the sanitary food law, the food inspectors visited 422 cities and towns having a total population of one and one-half millions. In many cases but one inspection visit was made during the year. This was particularly true of the small towns. A reasonable enforcement of the sanitary food law would not be secured by such infrequent visits if it were not for the fact that every local health officer is a deputy food inspector.

Nine thousand, four hundred and one establishments were visited during the year, including dairies, groceries, meat markets, bakeshops, hotels and restaurants, ice cream factories, saloons and other manufacturing and distributing establishments handling food. But 62 places were reported as excellent, 4689 were rated as good, 4183 as fair, 357 as poor and 110 as bad. Sixty of the 110 bad places were dairies, 378 of which were visited by the inspectors. As has always been the case, the inspectors found the dairies to be less sanitary than any other class of places visited. But 76 dairies were rated good, 173 were fair only and 69 were poor.

Six hundred and twenty-six meat markets were rated good, 497 were fair, 27 poor and 4 bad. 1815 of the 3446 grocery stores were rated good. But 7 were condemned as bad. Of the 152 saloons visited none were rated excellent, 17 were in good condition, 105 were fair only, 23 were poor and 7 bad. The sanitary condition of saloons is unsatisfactory. During the coming year food inspectors will give special attention to this class of establishments, and saloon keepers, like butchers, bakers and restaurant proprietors will either clean up or shut up.

A special study has been made of the hotels of the state, 383 of which were inspected both to determine their condition with reference to the sanitary food law and the observance of the ninety-nine inch sheet law. Of the 383 hotels inspected, 153 were rated good, 220 fair, 9 were poor and one only was bad. In general the hotel situation is greatly improved over conditions observed but a few years ago. Sanitary toilets have been constructed and bath rooms installed in nearly every hotel. The kitchens are for the most part well equipped and properly conducted. The dining rooms are sanitary and cheerful. This last condition does not however, apply to many country hotels where heating facilities are inadequate, and windows are too small for proper lighting. Special note was made of the condition of the clothing of hotel employees. In the modern hotels the cooks and waiters were suitably clothed, but in the smaller places the dress of the help in the kitchen was untidy and frequently dirty. Dirty clothes are but an evidence of slovenly habits. They are no longer any more acceptable in the hotel kitchen than they are behind the desk in the lobby.

The long sheet law is not obeyed. Seventy-five per cent of the hotels were still using the short sheet instead of the regulation 99 by 81 inch sheet. The excuse usually offered was that the sheet had shrunk in washing. This of course is false. Sheets will shrink a few inches but they will not shrink two feet. The traveling public will be pleased with the statement that with few exceptions the springs and mattresses were in good condition.

CITIES AND TOWNS VISITED AND INSPECTED, 1915–1916.

City or Town.	County.	Number Times Inspected.	Population.
Acton	Marion	1	460
Adams	Decatur	2	378
Albion	Noble	1	1,213
Alexandria	Madison	2	5,096
Alert	Decatur	1	206
Alpine	Fayette	1	30
Allensville	Switzerland	2	52
Anderson	Madison	4	23,626
Andersonville	Franklin	2	348
Andrews	Huntington	1	957
Angola	Steuben	1	2,840
Antioch	Switzerland	1	
Arcadia	Hamilton	3	990
Arlington	Rush	3	450
Atlanta	Hamilton	3	876
Attica	Fountain	1	3,335
Auburn	DeKalb	4	4,179
Aurora	Dearborn	2	4,790
Avilla	Noble	1	579
Azalia	Bartholomew	1	110
Banquo	Huntington	1	75
Bascom	Ohio	2	90
Batesville	Ripley	1	2,531
Bath	Franklin	1	125
Bedford	Lawrence	2	10,016

CITIES AND TOWNS VISITED AND INSPECTED, 1915–1916.

City or Town.	County.	Number Times Inspected.	Population.
Benham	Ripley	1	135
Bennington	Switzerland	1	127
Berne	Adams	1	1,316
Bloomfield	Greene	2	2,069
Bloomington	Monroe	4	10,019
Blue Ridge	Shelby	1	200
Bluffton	Wells	2	5,237
Boggstown	Shelby	1	814
Borden	Clark	1	350
Boston	Wayne	1	122
Boxley	Hamilton	1	100
Boyleston	Clinton	1	120
Brazil	Clay	1	10,115
Bright	Dearborn	1	128
Bristol	Elkhart	1	535
Brook	Newton	1	1,067
Brookfield	Shelby	1	300
Brookville	Franklin	3	2,169
Brownstown	Jackson	1	1,492
Brynesville	Lawrence	1	75
Buenavista	Monroe	1	75
Bunker Hill	Miami	2	668
Burnettsville	White	1	489
Burney	Decatur	1	200
Butlerville	Jennings	1	400
Cambridge City	Wayne	1	2,237
Campbellsburg	Washington	1	668
Carbondale	Warren	1	65
Carmel	Clark	2	626
Carthage	Rush	1	873
Cedar Grove	Franklin	1	185
Centersquare	Switzerland	2	64
Centerville	Wayne	1	1,019
Charlestown	Dearborn	1	75
Chestertown	Porter	1	1,400
Cicero	Hamilton	1	41
Clarkshill	Tippecanoe	1	463
Clearspring	Jackson	1	
Clifty	Decatur	1	211
Clinton	Vermillion	1	7,884
Cochran	Dearborn	2	858
Columbus	Bartholomew	2	9,153
Connersville	Fayette	1	8,188
Columbia City	Whitley	2	3,683
Converse	Miami	2	1,164
Cortland	Jackson	1	166
Corydon	Harrison	1	1,703
Correct	Ripley	1	32
Covington	Fountain	1	2,069
Cross Plains	Ripley	1	198
Crawfordsville	Montgomery	5	10,731
Crothersville	Jackson	1	1,038
Crown Point	Lake	2	810
Cyclone	Clinton	1	50
Clem Corner	Franklin	1	
Dayton	Ripley	2	80
Dale	Spencer	1	583
Daleville	Delaware	1	650
Danville	Boone	2	1,640
Darlington	Montgomery	2	780
Decatur	Adams	2	4,631
Delphi	Carroll	3	2,161
Denver	Miami	1	850
Dillsboro	Dearborn	1	425
Dora	Wabash	1	75
Dover	Dearborn	4	
Dudleytown	Jackson	1	75
Dugger	Sullivan	1	1,226
Dunkirk	Jay	1	3,031
Eagletown	Hamilton	1	275
East Chicago	Lake	5	26,938
East Enterprise	Switzerland	2	150

CITIES AND TOWNS VISITED AND INSPECTED, 1915–1916

City or Town.	County.	Number Times Inspected.	Population.
Eaton	Delaware	1	1,428
Edinburg	Johnson	1	2,040
Elizaville	Boone	2	100
Elkhart	Elkhart	2	21,327
Elizabethtown	Bartholomew	1	350
Ellettsville	Monroe	1	676
Elnora	Daviess	1	961
Elrod	Ripley	1	150
Elwood	Madison	4	11,028
Evansville	Vanderburg	3	76,427
Ewing	Jackson	1	750
Fairfield	Franklin	1	200
Fairland	Shelby	1	600
Fairmount	Grant	1	2,506
Fairview	Switzerland	2	100
Falmouth	Rush	1	200
Farmland	Randolph	1	907
Fenns	Shelby	2	50
Fishers	Hamilton	1	188
Ferdinand	Dubois	1	827
Fickle	Clinton	1	25
Five Points	Marion	1	
Flat Rock	Shelby	2	350
Florence	Switzerland	1	240
Forest Hill	Decatur	1	111
Fort Wayne	Allen	5	73,338
Fortville	Hancock	2	1,174
Foster	Warren	1	50
Fountaintown	Shelby	1	350
Fowlertown	Grant	2	293
Frankfort	Clinton	7	9,339
Franklin	Johnson	2	4,747
Freeport	Shelby	1	95
French Lick	Orange	1	1,803
Freetown	Jackson	1	350
Friendship	Ripley	1	250
Gadsden	Boone	2	50
Galveston	Cass	1	658
Gary	Lake	6	32,802
Garrett	DeKalb	5	4,613
Gas City	Grant	2	3,224
Gaston	Delaware	1	638
Gaynorsville	Decatur	1	25
Geneva	Adams	1	1,140
Glenwood	Fayette	2	266
Goldsmith	Tipton	1	250
Goshen	Elkhart	4	8,864
Gosport	Owen	1	776
Government Dam		1	
Grammer	Bartholomew	1	125
Grayford	Jennings	1	35
Greendale	Dearborn	1	697
Greenfield	Hancock	1	4,448
Greenhill	Warren	1	170
Greensburg	Decatur	2	5,610
Greentown	Howard	1	1,166
Greenwood	Johnson	2	1,608
Groomsville	Tipton	1	40
Gwynneville	Shelby	1	150
Goodland	Newton	1	1,105
Hammond	Lake	5	25,195
Hanfield	Grant	1	100
Haron	Switzerland	1	
Harrison	Decatur	1	
Hartford City	Blackford	3	6,562
Hartsville	Bartholomew	1	358
Hemlock	Howard	1	175
Henderson	Rush	2	70
Henryville	Clark	1	480
Highland	Lake	1	304
Hillisburg	Clinton	1	280
Hope	Bartholomew	1	1,223

CITIES AND TOWNS VISITED AND INSPECTED, 1915-1916.

City or Town.	County.	Number Times Inspected.	Population.
Holton	Ripley	1	350
Homer	Rush	1	150
Horace	Decatur	1	50
Horton	Hamilton	2	
Huntingburg	Dubois	3	2,464
Huntington	Huntington	1	10,662
Idaville	White	1	650
Ijamsville	Wabash	1	125
Independence	Warren	1	300
Indianapolis	Marion	20	265,890
Indiana Harbor	Lake	2	
Ingalls	Madison	1	322
Jeffersonville	Clark	2	10,412
Jolietville	Hamilton	2	250
Jonesboro	Grant	1	1,573
Jonesville	Bartholomew	2	213
Judyville	Warren	1	75
Kendallville	Noble	5	5,781
Kennard	Henry	1	449
Kentland	Jefferson	1	1,209
Kempton	Tipton	1	600
Keystone	Wells	1	242
Kirklin	Clinton	2	699
Kokomo	Howard	5	20,210
Knightstown	Henry	1	2,008
Kurtz	Jackson	2	200
Kramer	Warren	1	212
Ladoga	Montgomery	1	1,148
Lafayette	Tippecanoe	3	21,061
Lafountaine	Wabash	1	683
Lagrange	Lagrange	1	1,772
Laketon	Wabash	1	600
Lamar	Spencer	1	60
Lamong	Hamilton	1	18
Lancaster	Jefferson	1	110
Landessville	Grant	1	
Lapel	Madison	1	1,045
Laporte	Laporte	8	12,266
Laurel	Franklin	1	503
Lawrenceburg	Dearborn	1	3,930
Lawrenceville	Dearborn	1	120
Leesville	Lawrence	1	125
Lebanon	Boone	4	6,974
Letts	Decatur	1	200
Letts Corner	Decatur	1	200
Lewis Creek	Shelby	2	85
Lewisville	Henry	1	446
Liberty Center	Wells	2	351
Linden	Montgomery	1	556
Linton	Greene	2	7,321
Logan	Decatur	1	75
Logansport	Cass	4	20,470
Lagro	Wabash	1	463
Laotto	Noble	1	300
Linconville	Wabash	1	162
Liberty	Union	1	1,338
London	Shelby	1	200
Mace	Montgomery	1	310
Madison	Jefferson	1	6,934
Majenica	Huntington	1	250
Marengo	Crawford	1	686
Marietta	Shelby	2	210
Martinsville	Morgan	1	4,774
Markle	Huntington	1	820
Markland	Switzerland	2	200
Matthews	Grant	2	
Maurice	Jackson	1	
Marion	Grant	8	20,369
Maxwell	Hancock	1	350
Mays	Rush	2	225

CITIES AND TOWNS VISITED AND INSPECTED, 1915–1916.

City or Town.	County.	Number Times Inspected.	Population.
McCordsville	Hancock	1	250
Mechanicsburg	Henry	1	175
Medora	Jackson	1	675
Meltzer	Shelby	1	
Metamora	Franklin	1	588
Mexico	Miami	1	521
Michigan City	Laporte	8	21,112
Middlebury	Elkhart	1	600
Middletown	Henry	1	1,175
Milners Corner	Hancock	1	115
Miller	Lake	1	638
Milltown	Fayette	1	586
Minalla	Rush	1	
Milroy	Rush	1	770
Milan	Ripley	2	557
Mishawaka	St. Joseph	3	15,046
Mitchell	Lawrence	1	42,68
Milhousen	Decatur	1	211
Mohawk	Hancock	1	200
Monticello	White	1	2,190
Montpelier	Blackford	2	2,786
Monument City	Huntington	1	75
Monroeville	Allen	1	910
Morristown	Shelby	3	622
Mooreshill	Dearborn	1	424
Mount Ayr	Newton	1	231
Mount Etna	Huntington	1	148
Mount Auburn	Wayne	2	120
Mount Carmel	Franklin	1	142
Morocco	Newton	1	231
Muncie	Delaware	6	25,535
Nebraska	Jennings	1	153
New Albany	Floyd	3	20,629
Neff	Rush	1	
New Alsace	Dearborn	3	375
New Bath	Franklin	1	
Newbern	Bartholomew	1	200
New Carlisle	St. Joseph	2	1,097
New Castle	Henry	3	11,028
New Holland	Wabash	1	72
New Marion	Ripley	1	225
New Palestine	Hancock	1	450
New Point	Decatur	2	341
New Richmond	Montgomery	1	464
New Salem	Rush	1	175
New Trenton	Franklin	1	200
Noblesville	Hamilton	5	5,213
Norman Station	Jackson	1	175
Norristown	Shelby	1	
North Landing	Ohio	1	
North Manchester	Wabash	2	2,428
North Vernon	Jennings	1	2,960
Oakland City	Gibson	2	2,370
Oldenburg	Franklin	1	956
Orleans	Orange	2	1,367
Osgood	Ripley	4	1,169
Paoli	Orange	1	1,278
Patriot	Switzerland	1	340
Pekin	Washington	1	300
Pendleton	Madison	2	1,293
Pennville	Jay	3	800
Pence	Warren	1	150
Perkinsville	Madison	1	318
Peru	Madison	4	12,996
Petersburg	Pike	1	2,170
Philadelphia	Hancock	1	182
Pipe	Boone	1	25
Pine Village	Warren	1	352
Pierceville	Ripley	1	150
Pleasant	Switzerland	1	50
Pleasant Plain	Huntington	1	90
Plymouth	Marshall	4	3,928

CITIES AND TOWNS VISITED AND INSPECTED, 1915-1916.

City or Town.	County.	Number Times Inspected.	Population.
Poneto	Wells	1	308
Portland	Jay	4	5,295
Princeton	Gibson	5	6,648
Queensville	Jennings	1	110
Quercus Grove	Switzerland	1	40
Rainsville	Warren	1	120
Raleigh	Rush	2	160
Red Key	Jay	1	1,714
Reddington	Jackson	1	125
Remington	Jasper	1	982
Rennsselaer	Jasper	1	2,458
Reynolds	White	1	377
Richland	Rush	1	119
Richmond	Wayne	5	24,369
Richvalley	Wabash	1	175
Rising Sun	Ohio	2	1,513
Roanoke	Huntington	1	699
Roann	Wabash	1	447
Rochester	Fulton	4	3,364
Rockport	Spencer	1	2,736
Roll	Blackford	1	125
Rome City	Noble	1	436
Rosedale	Parke	1	1,166
Rugby	Bartholomew	2	55
Rushville	Rush	1	5,115
Russiaville	Howard	1	603
Saint Leon	Dearborn	3	261
Saint Meinard	Spencer	1	538
Saint Paul	Decatur	2	1,050
Saint Peter	Franklin	1	150
Salem	Washington	1	2,283
Sandborn	Knox	1	445
Scipio	Jennings	1	200
Scircleville	Clinton	1	300
Scottsburg	Scott	1	1,669
Seelyville	Vigo	1	1,188
Sellersburg	Clark	2	676
Seymour	Jackson	2	6,305
Sexton	Rush	2	120
Sharpsville	Tipton	1	550
Shelbyville	Shelby	3	10,665
Sheridan	Hamilton	3	1,768
Shirley	Hancock	2	1,519
Shoals	Martin	1	1,015
Silver Lake	Kosciusko	1	493
Sloan	Warren	1	
Smithland	Shelby	2	100
South Gate	Franklin	1	100
South Bend	St. Joseph	4	63,580
South Whitley	Whitley	1	1,176
Spencer	Owen	1	2,150
Spades	Ripley	1	150
Sparksville	Jackson	1	140
Spraytown	Jackson	1	79
State Line	Warren	1	195
Strawton	Hamilton	1	89
Sulphur Hill	Shelby	1	150
Surprise	Jackson	1	100
Sullivan	Sullivan	1	4,610
Summitville	Madison	1	1,387
Sunman	Ripley	1	353
Switz City	Greene	1	620
Tampico	Jackson	1	140
Taylorsville	Bartholomew	1	450
Terhune	Boone	1	220
Terre Haute	Vigo	2	68,897
Tipton	Tipton	1	4,230
Topeka	LaGrange	1	650

CITIES AND TOWNS VISITED AND INSPECTED, 1915-1916.

City or Town.	County.	Number Times Inspected.	Population.
Union City	Randolph	1	3,449
Upland	Grant	1	7,337
Utica	Clarke	1	426
Urbana	Wabash	1	280
Vallonia	Jackson	1	475
Valleene	Orange	1	104
Valparaiso	Porter	6	7,337
Van Buren	Grant	2	1,189
Velpin	Pike	1	250
Versailles	Ripley	2	486
Veedersburg	Fountain	1	1,812
Vevay	Switzerland	2	1,256
Vincennes	Knox	2	17,215
Wabash	Wabash	3	8,717
Waldron	Shelby	1	480
Walton	Dearborn	1	579
Warren	St. Joseph	1	
Waveland	Montgomery	1	
Warsaw	Kosciusko	2	4,650
Warrington	Hancock	1	200
Waterloo	DeKalb	1	1,167
Washington	Daviess	2	7,854
Waymansville	Bartholomew	1	150
Waynetown	Montgomery	1	734
West Baden	Orange	2	746
Westfield	Hamilton	2	700
West Lebanon	Warren	1	642
Westport	Decatur	1	675
Wheeling	Delaware	1	100
Whitcomb	Franklin	1	
Whiteland	Johnson	1	343
Whiting	Lake	1	7,887
Willow Branch	Hancock	1	140
Winchester	Randolph	2	4,546
Winthrop	Warren	1	95
Wingate	Montgomery	1	446
Wolcott	White	1	873
Winn	Franklin	1	
Wirt	Jefferson	1	55
Worthington	Greene	1	1,732
Yorktown	Delaware	1	1,000
Yorkville	Dearborn	2	157
Zionsville	Boone	1	840

Total population of cities and towns visited	1,445,655
Different cities and towns visited	422

SUMMARY OF INSPECTIONS.

Inspections.	Number In-spected.	Number Ex-cellent.	Number Good.	Number Fair.	Number Poor.	Number Bad.
Dairies	378	0	76	173	69	60
Grocery stores	3,446	18	1,815	1,549	57	7
Meat Markets	1,159	5	626	497	27	4
Drug stores	707	3	551	143	10	0
Bakeries and confectioneries	1,363	14	757	549	34	9
Hotels and restaurants	1,513	17	558	849	78	11
Creameries	79	1	41	33	3	1
Slaughter houses	55	0	19	29	6	1
Ice cream parlors	62	0	24	37	1	0
Ice cream factories	105	1	30	59	13	2
Bottling works	20	0	13	6	1	0
Poultry houses	46	0	9	29	8	0
Milk depots	74	1	28	38	5	2
Milk plants	13	0	5	7	1	0
Flour mills	19	0	16	3	0	0
Fish markets	41	0	21	15	4	1
Ice and cold storage plants	6	0	6	0	0	0
Wholesale groceries	14	0	12	2	0	0
Saloons	152	0	17	105	23	7
Fruit and vegetable stores	15	0	2	9	2	2
Produce companies	14	0	5	8	1	0
Cider mill	1	0	0	1	0	0
Wholesale drug store	1	0	1	0	0	0
Lunch carts	1	0	0	1	0	0
Wholesale confectioneries	1	0	1	0	0	0
Canning factories	96	1	43	36	13	3
Sanitary ice companies	2	1	1	0	0	0
Soft drink parlors	1	0	0	0	1	0
Potato chip factory	1	0	0	1	0	0
Wholesale meat markets	2	0	1	1	0	0
Brewing companies	2	0	2	0	0	0
Packing plants	4	0	3	1	0	0
Dressed beef company	1	0	0	1	0	0
Condensed milk plants	5	0	5	0	0	0
Wholesale egg store	1	0	0	1	0	0
Tea and coffee store	1	0	1	0	0	0
Totals	9,401	62	4,689	4,183	357	110

COMPARATIVE STUDY OF SANITARY CONDITIONS.

A comparison of the sanitary conditions of the several classes of establishments visited with the results obtained during the years from 1907 to 1916 inclusive, shows a slight but definite improvement. This fact is the more gratifying because the inspectors are each year insisting upon a more stringent observance of every detail of the sanitary food law.

A study of the table is interesting, but the figures given must be interpreted with the changed sanitary requirements in mind.

COMPARATIVE STUDY OF SANITARY CONDITIONS IN 1907-1916.

	Year.	Condition.				
		Excellent, Per Cent.	Good Per-Cent.	Fair Per Cent.	Poor Per Cent.	Bad Per Cent.
Dairies	1907	5.2	16.2	43.5	19.1	15.8
	1908	1.4	14.8	44.1	26.8	12.7
	1909	1.0	20.2	39.5	30.2	8.5
	1910	....	13.7	42.9	24.3	19.0
	1911	.5	9.5	23.6	35.1	31.1
	1912	.5	3.2	32.4	37.2	26.4
	1913	.3	16.1	43.0	31.8	8.6
	1914	.2	9.0	29.0	36.7	24.3
	1915	....	23.5	41.1	25.1	10.1
	1916	....	20.1	45.7	18.2	13.2
Grocery stores	1907	4.2	39.0	46.5	8.8	1.4
	1908	2.8	45.5	46.1	44.9	.7
	1909	4.8	53.6	35.6	5.3	1.0
	101J	3.8	60.3	30.8	4.6	.3
	1911	2.4	57.3	35.2	4.5	.3
	1912	2.2	62.8	31.0	3.5	.3
	1913	3.6	64.2	29.0	2.9	.1
	1914	1.7	53.5	42.6	1.9	.1
	1915	1.2	56.8	40.5	1.2	.1
	1916	.5	52.6	44.9	1.6	.2
Meat markets	1907	2.8	35.0	47.3	9.9	4.9
	1908	1.8	39.8	47.4	10.1	1.8
	1909	2.2	57.7	34.0	5.4	.5
	1910	3.4	58.8	32.0	4.8	.2
	1911	1.3	53.2	39.7	5.2	.5
	1912	.9	60.4	35.3	2.4	.3
	1913	1.9	64.7	30.2	2.9	.1
	1914	.7	55.0	41.3	2.6	.2
	1915	1.1	55.8	40.7	2.1	.1
	1916	.4	54.0	42.9	2.3	.3
Drug stores	1907	8.1	58.4	30.7	3.2	.0
	1908	5.4	76.9	15.8	1.5	.0
	1909	3.8	72.9	18.7	3.4	.8
	1910	2.2	80.6	13.6	3.0	.4
	1911	1.5	78.4	18.3	1.4	.1
	1912	1.9	77.9	18.3	1.6	1.6
	1913	9.7	76.7	12.4	1.1	.0
	1914	1.4	79.5	19.6	.2	.0
	1915	.8	78.0	20.7	.4	.0
	1916	.4	77.9	22.5	1.4	.0
Bakeries and confectioneries	1907	4.4	40.5	40.8	11.6	2.8
	1908	4.3	39.1	46.4	8.0	2.1
	1909	3.7	49.7	36.2	8.9	1.4
	1910	3.8	52.5	37.3	5.4	.8
	1911	2.6	55.3	35.6	5.9	.4
	1912	1.8	56.6	36.0	4.9	.4
	1913	4.0	61.0	31.6	2.7	.5
	1914	1.3	54.4	40.7	3.2	.1
	1915	1.5	60.6	37.7	3.0	.0
	1916	1.2	55.5	40.4	2.5	.6
Hotels and restaurants	1907	4.5	33.7	40.5	18.0	3.2
	1908	2.0	34.6	48.9	11.4	1.6
	1909	1.3	32.8	47.2	16.1	2.2
	1910	.9	37.7	52.3	8.1	.8
	1911	.7	35.1	52.0	10.6	1.5
	1912	.6	41.0	50.3	7.4	.4
	1913	2.4	45.8	45.6	5.5	.5
	1914	.4	39.8	53.5	6.6	.1
	1915	.7	38.9	56.2	3.7	.3
	1916	1.1	36.8	56.0	5.1	.7

CONDEMNATION REPORTS.

An important feature of the sanitary food law is the provision which gives the state food commissioner authority to condemn unsanitary places and to close such places pending their improvement. Under this section of the law 637 establishments were condemned during the year. In 606 cases the condemnation notice was issued because of unsanitary conditions at the plant. The inspectors also observed that in 497 of these places the floors, equipment or building itself were improperly constructed.

CONDEMNATIONS—OCTOBER 1, 1915, TO OCTOBER 1, 1916.

Classification.	Reasons for Condemnation.		Total Number of Places Condemned.
	Unsanitary Conditions.	Improper Construction.	
Bakeries	53	40	53
Bakery and restaurants	1	1	1
Bottling Works	1	1	1
Cafes	1	....	1
Canning factories	1	1	1
Condensories	1	1	1
Confectioneries	17	14	17
Confectioneries and Ice Cream Plants	1	....	1
Confectionery and Lunch Rooms	1	1	2
Creameries	19	17	19
Dairies	160	147	160
Depots	1	1	1
Drug Stores	....	3	3
Fish Markets	3	3	3
Fruit Stores	3	2	3
Groceries	74	53	77
Grocery and Meat Markets	14	11	18
Grocery and Lunch Counters	1	1	1
Grocery and Restaurants	2	1	2
Hotels	23	19	23
Ice Cream Plants	15	16	22
Livery Stables	1	1	1
Lunch Carts	....	1	1
Meat Markets	21	24	30
Milk Depots	12	10	12
Poultry Houses	1	1	1
Restaurants	137	97	140
Restaurant and Bakeries	2	2	2
Restaurant and Confectioneries	1	....	1
Saloons	12	10	12
Saloon and Lunch Rooms	18	18	18
Slaughterhouses	8	8	8
Slaughterhouses and Meat Markets	1	1	1
Totals	606	497	637

INSPECTION OF CANNERIES.

SEASON OF 1916.

The Indiana canner did not pack his usual output in 1916. Weather conditions which were excellent in the spring and early summer and which promised an abundant crop, were not maintained throughout the growing season. Fierce droughts stopped fruiting. Tomatoes which should have produced a maximum yield made but half a crop. The sweet corn crop was below the average. The pea pack was light and of average quality only. Many factories did not operate but the plants which did run were handled in a sanitary manner. The canner has learned that the sanitary food law helps his business, and that the money he invests in cement floors, additional water supply, decent toilets and clean operatives will earn his real dividends because of the better price his product commands on the market.

The following list of canneries is not complete but is given because it shows in brief the condition of the factories inspected.

INSPECTION OF CANNERIES, SEASON 1916.

ACTON—

Acton Canning Company.—This place is rated "Fair" by the inspector, fault being found with the toilets and sewerage. Tomatoes only are packed.

ALERT—

Alert Canning Company.—A small handpack plant, fairly well kept canning tomatoes only.

ALEXANDRIA—

Alexandria Preserving Company.—Building is brick and concrete, with concrete floors. It has outside toilets, sewer, and wash stands. The grade is "Fair."

ANDERSON—

Powers and Sheppard Canning Company.—These people were canning tomatoes under an open shed, bad floor, no toilets, dumping refuse within eight feet of "plant". Packed tomatoes and pulp. "Fair."

ARCADIA—

Arcadia Canning Company.—Good frame building, board and concrete floors, good outside toilets, refuse sewered and hauled. Packed tomatoes and pulp. "Fair."

AUSTIN—

Austin Canning Company.—Plant of J. S. Morgan and Son, who are all the time making improvements in their factory. They do a general packing business and operate throughout the year. They have a good plant.

The Star Canning Company.—This place was condemned in 1914 and did not operate in 1915, but after making certain improvements was permitted to pack tomatoes and pumpkins this year. It is still far short of a satisfactory plant.

BROWNSTOWN—

W. A. Patrick Company.—Pack tomatoes, beans and pumpkin in a small way in a poor frame building with a fair concrete floor. The surroundings are not good and the place is scarcely entitled to a score of "Fair."

BUNKER HILL—

Bunker Hill Canning Company.—Fair frame building with fair board floor, flush toilets, sanitary sewer, wash and dressing rooms. Pack tomatoes and tomato pulp. Score "Fair."

CARTHAGE—

Dana Canning Company.—A frame building with board floors, in fair condition, sewage pumped into stream some distance away, moderate equipment, is the estimate put on this plant, which is a branch of the Dana Packing Company of Ohio, and is rated as "Fair."

CLARK'S HILL—

Franklin McVeagh and Company.—A foreign corporation (Chicago) manufacturing catsup, chili sauce and tomato pulp—operates as a satisfactory plant and is rated as better than "Fair."

COLUMBUS—

Van Camp Packing Company.—This is a branch plant of the Van Camp Packing Company of Indianapolis. The building is a fair frame with good concrete and board floors, sanitary sewerage, fair outside toilets, and is a well conducted plant. Tomatoes, pumpkin and catsup are packed here. The score is "Good."

CRAWFORDSVILLE—

Van Camp Packing Company.—This is one of the newer plants of the state and embodies all that is latest and best in building and equipment. The output consists of tomatoes and pulp. The rating is better than "Good."

CROTHERSVILLE—

Rider Packing Company.—This plant belongs to an old firm but it has been so thoroughly over-hauled and rebuilt and equipped that it is now one of the best plants in southern Indiana and is entitled to a score of "Good plus." Riders do a general packing business and operate throughout the whole year.

DELPHI—

The Great Western Canning Company.—A good plant throughout—good buildings, good equipment, good, sanitary conditions and a good spirit. The output is corn, peas, hominy and pumpkin.

DUNREITH—

Farmers' Canning Company.—Frame building in good repair, concrete floors, flush toilets, dressing rooms for women, sewerage, satisfactory equipment, for the packing of tomatoes and tomato pulp. "Good."

EDINBURG—

Naomi Packing Company.—This plant packed corn only, this year and is well equipped for it. It is a good food factory.

ELNORA—

Elnora Canning Company.—This plant was built a long time ago on a flat tract of ground, impossible of drainage. A new plant should be built on well drained ground before the season of 1917. Despite the unsatisfactory location and poor building so much care was taken that the plant is entitled to a score of "Fair."

ENGLISH—

English Canning Company.—Tomatoes and tomato pulp packed here. This plant is showing improvement in methods, equipment and management, but there is still much to do in the way of betterment.

EVANSVILLE—

Indiana Canning Company.—This plant has the advantage of a splendid brick, steel and concrete building, equipped with city sewage, city lights, sanitary flush toilets, good wash and dressing rooms, etc., and should run twelve months in every year. But it dosen't, just long enough to pack tomatoes and make some tomato pulp.

FAIRMOUNT—

T. A. Snider Preserving Company.—A good plant, well equipped and well managed. This is one of the six plants operated in Indiana by the Snider Corporation and complies in every regard with all requirements.

FRANKLIN

Franklin Canning Company.—This is one of the Grafton Johnson plants. Nothing but corn is packed. That is well done, the building, equipment and sanitation being entirely satisfactory to the inspector.

FRANKFORT—

Dana Canned Goods Company.—A frame building in fair condition, fair board floors, inside toilets, not the best of sewerage facilities, and fair equipment is a fair description of this corn packing plant, which must be rated a little less than "Fair."

FREETOWN—

Freetown Packing Company.—This is a branch plant of Rider Brothers of Crothersville, is a well kept, practically new plant and packs tomatoes and tomato pulp. "Good."

GREENWOOD—

J. T. Polk Company.—This is one of the oldest firms in the country in the food packing business but it never gets too old or "too set in its ways" to adopt new methods or install new equipment when conditions can be bettered or products improved.

HARRISON—

At this place, on the Ohio-Indiana State line, is located another one of the T. A. Snider plants. Here pulp, only, is manufactured. The plant is modest and the equipment not very elaborate but a satisfactory product is packed.

HENRYVILLE—

Jeffersonville Canning Company.—This plant built a long time ago, and built where there was no chance for decent drainage, is very much out of repair and must be rebuilt and relocated before another packing season opens. Tomatoes and pulp score "Poor."

HOPE—

The Hope Canning Company.—The inspector rates this plant as "Poor—old and dilapidated and must be rebuilt or discontinued." Corn and tomatoes.

INDIANAPOLIS—

J. Henry Amt Company.—This company manufactures kraut, pickles and vinegar. The drainage is poor, the toilets (in the yard) are poor and the place is "cluttered up." The plant is located in a thickly settled part of the city—which is not the place for a plant like this. The score is "Poor."

Central States Canning Company.—This plant started in 1915, before it was thoroughly equipped, but the management promised "to speedily put the place in the best sanitary condition and very soon to have the best canning factory in the state." The promise has not been kept in either particular, though it is easy to keep the first part of it. The score slides from "Fair" last year to "Poor" this year.

Columbia Conserve Company.—This is a very good plant with every facility for the health and comfort of employes, and for the production of good and wholesome food products. General line packed.

Haverskamp and Hagelskamp Company.—This place shows a decided improvement over 1915. With more care in washing tomatoes the score would be better than "Fair." General line packed.

W. D. Huffman and Company.—This factory shows commendable improvement in buildings, equipment and methods. Full line of food products packed.

C. W. Jackson and Son.—This concern is doing business in a building not well adapted to the packing business, but all things considered, are doing a fair job. More attention to little things—details—would warrant a higher score. "Poor."

Schnull and Company.—Every equipment is provided for the betterment of the plant, the employe and the product, and it is intelligently handled.

Van Camp Packing Company.—This company has a good plant as it is, but proposes to build a new one embodying all the newest and best in equipment, efficiency and sanitation.

JEFFERSONVILLE—

Jeffersonville Canning Company.—This is an all the year round plant, packing hominy, kraut, pork and beans in a satisfactory manner in a good plant under good management.

JASPER—

B. F. Shaver Canning Company.—Mr. Shaver has been operating canning factories in Virginia for a number of years until last year he came to Indiana and leased an abandoned plant at Jasper and one at Huntingburg, each in Dubois county. The plant at Jasper was condemned and cannot longer be used until radical improvements have been made. The plant at Huntingburg was purchased outright and was in very good condition this year, but the owner contemplates making extensive improvements before the tomato season next year. Mr. Shaver will be a valuable addition to the industry, as he is an intelligent progressive gentleman.

KENNARD—

Kennard Canning Company.—This company packs, in good condition, tomatoes, pulp and pumpkin in a satisfactory plant. It is operated by Goddard and Company Wholesale Grocers, Muncie, Indiana.

KNIGHTSTOWN—

Knightstown Conserve Company.—The inspector would like to see improvements in this plant—in the building, the floor, the toilets and general sanitation.

KOKOMO—

Saylor's Packing Company.—A well equipped, well managed plant, which packed this year, corn.

LADOGA—

Ladoga Canning Company.—This company has a large business packing corn, tomatoes, pumpkin and kraut, in an old dilapidated frame building which should be abandoned. The sewerage is unsatisfactory and it is impossible to make a good plant out of it. The rating is "Poor."

LEBANON—

Ladoga Canning Company.—This is one of the new good plants of the state, packing a general line of foods in an intelligent manner. It is well equipped throughout and deserves large success. "Good."

LEOTTA—

Morgan Packing Company.—This is a branch plant operated by J. S. Morgan and Son, of Austin, and is not up to the Morgan standard. It is old and in poor condition and should be abandoned or rebuilt. "Poor."

LEXINGTON—

This plant did not operate in 1915 and should not have operated in 1916 in its present condition. Radical improvements must be made before it is used again as a food factory. "Poor."

LITTLE YORK—

Morgan Packing Company.—This is a branch plant of J. S. Morgan and Son of Austin, and is new and fully meets all requirements. Tomatoes and tomato pulp are packed. "Good."

MADISON—

T. A. Snider Preserving Company.—This plant shows a gradual improvement with each year and is successfully and intelligently operated. Tomato pulp and tomato catsup manufactured. "Good."

MARTINSVILLE—

Van Camp Packing Company.—A general line of food stuffs manufactured here. The plant runs all the year, is well equipped and conducted in a sanitary manner. "Good."

MEDORA—

Medora Packing Company.—This is a small country tomato plant but it is one of the best in the state.

MUNCIE—

Tuhey Canning Company.—Packs a general line, operates throughout the year, is well equipped and is a "Good" place.

Butterfield Canning Company.—Tomatoes and catsup packed in a good building with a good concrete floor. Equipment and spirit good.

NEW CASTLE—

Sears and Nichols Canning Company.—The building in which the concern packs tomatoes and pulp is not the best but the equipment is satisfactory and unusual care is taken in every step of the manufacturing process. This entitles the firm to a score of "Good."

ORESTES—

Orestes Canning Company.—Tomatoes only, packed by this company in a fair frame building, with fair equipment and with fair success. "Fair."

PAOLI—

Tomato Products Company.—After two years of experimenting this excellent plant has turned its whole energy to the production of Italian paste. The progressive spirit shown by this splendid firm has attracted the attention of the best food manufacturers of the United States and most of them have made pilgramages to the plant for information and inspiration.

PATRIOT—

Wm. Bunger.—A small farm hand pack tomato plant, with poor equipment. Though some care is exercised, and a safe food product produced, the score must be "Poor."

PETERSBURG—

Petersburg Canning Company.—This is a well conducted, well equipped tomato plant and meets in every regard, every requirement of the Department. "Good."

PENDLETON—

Fall Creek Canneries.—Tomatoes and tomato pulp. There are some very commendable features in this plant but the men's toilets, the sewerage and the floor in the peeling room are not satisfactory. Improvements in these particulars must be made before a good score can be expected.

PIERCETON—

Reid, Murdock and Company.—A Chicago firm, with its main food factory at Hammond, Indiana, operates this plant for the production of catsup, kraut and chili sauce. The plant is a good one in equipment, in management, in spirit and product. A new $50,000 building has been erected this year.

PLAINVILLE—

Plainville Canning Company.—Tomato pulp and tomato pureé are the only food products packed by this firm. It is a satisfactory plant throughout. "Good."

ROCHESTER—

Rochester Canning Company.—This is not the best building, not yet the best equipment, but the intelligent supervision and watchful care given every step of the manufacturing process puts this concern in a class among the best in the state.

SCOTTSBURG—

Scottsburg Packing Company.—This plant has been recently acquired by Hoagland Brothers and they will make extensive improvements on the place. The condition is now "Fair."

SHARPSVILLE—

Sharpsville Canning Company.—N. L. Hutto has been in the packing business for a long time and has built up a large factory "piece-meal." His intelligent supervision and splendid spirit impels the writer to wish that he (Hutto) might soon have a new up-to-date plant, built as a result of his experience and ideals—and show the world just what he could do under such environments. "Good."

SHELBYVILLE—

Grafton Johnson.—This is Grafton Johnson's corn plant. Nothing else is packed here. It is a "Good" plant.

SHERIDAN—

Sheridan Packing Company.—Corn and tomatoes are packed by this satisfactory plant. The inspector gives a score of "Fair."

SHIRLEY—

At this place a plant was found concerning which there was little to commend and much to condemn. The building is poor, the sewage is unsatisfactory. So are the toilets, the wash rooms and dressing rooms and the whole place was found to be unclean. This factory is "Bad" and cannot longer operate under present conditions.

SPICELAND—

Citizens Canning Company.—Tomatoes and tomato pulp are packed here in a fair factory, with fair equipment, but a little more "ginger" should be injected into the place.

STRAUGHN—

S. [illegible] Murphy & Company.—Corn, tomatoes and pulp. Small in nearly everything except care. This plant is doing a mighty good job packing its line of foods.

SULLIVAN—

Sullivan Canning Company.—This food plant, well managed, was only fairly started on a good pack when a killing frost stopped the work. But the same misfortune came to nearly all the plants of the state. At Sullivan however, it appeared to be most severe.

SUMMITVILLE—

Summitville Canning Company.—Here we find a good brick building, good concrete floors, good wash and dressing rooms and satisfactory equipment—a well managed plant, turning out a good wholesome product.

TIPTON—

T. A. Snider Preserving Company.—This is another one of the Snider plants which is well equipped and well managed. Pulp. "Good."

Fame Canning Company.—This is another Grafton Johnson plant—and his plants are always in good condition, well equipped and well managed. He packs peas, corn and pulp at this factory.

UNDERWOOD—

Hoagland Brothers.—A good new brick building, concrete floors, sanitary toilets and a good equipment throughout puts this enterprising firm in good condition for their general pack.

VALLONIA—

Vallonia Canning Company.—The inspector says, "This is a very good plant, well equipped, and its help above the average."

VIENNA—

Vienna Packing Company.—A good plant, well equipped, operated in a satisfactory manner by two or three enterprising farmers. They are making good, too.

VIENCENNES—

Dyer Packing Company.—Pork and beans and catsup is the line packed by this enterprising firm. Despite the constant flights skyward of beans and pork and other ingredients, millions of cans of their good products are going through the mill and out on the market just as though no disturbing factors bothered the trade. "Good."

WARSAW—

Cruikshank Brothers Company.—This is a foreign concern packing corn, tomatoes and kraut in a fair plant in a fair way. "Fair."

WESTFIELD—

Geo. Van Camp and Sons.—This is an old firm, a long time in the packing business. The building has likewise been doing business a long time and needs furbishing up. The care taken in the plant, however, makes it a fair food factory.

WESTPHALIA—

Westphalia Canning Company.—This is a small country plant in Knox County, doing a very satisfactory job under difficulties.

WINDFALL—

Royal Packing Company.—A good plant, enterprising spirit, first class equipment. This is the second plant in Indiana, and the fifth on this side of the Atlantic to get into the tomato paste business. Next year this firm will probably give its whole attention to the production of Italian paste.

WHITELAND—

Grafton Johnson.—A large plant, well fitted to the manufacture of tomato pulp—and this year pulp was the sole output.. "Good."

MEDICAL FRAUDS.

The established policy of the State Board of Health is to tell the truth about patent and proprietary medicines. In the endeavor to spread this information widely, the drug laboratory has issued four circulars under the caption, "Medical Frauds." The fourth edition of fifty thousand which was issued during the year and almost immediately exhausted, follows:

MEDICAL FRAUDS.

FOURTH EDITION.

Published by the Indiana State Board of Health in the hope that the data it contains will be helpful in discouraging the use of nostrums and worthless preparations.

Read it carefully and then pass it along.

H. E. BARNARD,
State Food and Drug Commissioner.

MEDICAL FRAUDS.

FOURTH EDITION.

It is ignorance that makes it possible for patent medicine men to sell a hundred million dollars worth of their concoctions every year; it is ignorance that thinks fat will disappear after dosing with Parnotis or.that Sargol has a miraculous power to increase weight; it is ignorance that believes rheumatism can be cured before the cause of the pain is removed; it is ignorance that thinks beauty can be purchased in bottles of Spurmax or Canthrox, and it is ignorance that tolerates the idea that selfprescribing can relieve pain or cure disease.

To clear away these clouds of ignorance behind which many a patent and proprietary manufacturer hides while he practices his deceitful trade, the State Board of Health offers this the Fourth Edition of Medical Frauds. The material is not new, nor is it for the most part original, although the analytical data has been checked in our laboratories; it does attempt to tell the plain facts about some of the better known nostrums. If, after the reader knows that Amarol, sold for a complexion beautifier, is nothing but Epsom Salt with a little Borax; that Borothol, sold as an Eczema Remedy, is photographers' "Hypo" and Borax; that Fat-Off is soft soap; in fact that most of the widely advertised preparations are cheap, common chemicals put up in attractive packages and sold by the lure of a resonant but nondescriptive name, if he still wishes to waste his money and delay his cure we can do no more to prevent him.

False-advertising laws have done much to improve the character of the label and suppress exaggerated claims, but they fail of accomplishing the desired end because they cannot prevent the credulous who still think of medicine as a form of "Black Art" from falling into the error that a bottle of medicine is as good as a doctor's visit and costs less. Of course the educated mind is not fooled by such false argument and recognizes the fact that the chemistry of the body is the same kind of chemistry that is studied in the laboratory and that only those medicines have real value that are capable of assisting the chemical reactions within the cells of the diseased body.

Included in the list will be found a number of preparations which without doubt will do the work required of them. The depilatories or hair removers will take off hair, but the hair root is stimulated instead of injured and the hair grows again coarser than before. The deodorizing creams and powders are efficient in concealing odors and to that extent are substitutes for soap and water and body cleanliness, but to use them is to go back to the times when bathing was a little practiced virtue and strong perfumes an antidote for filth. Freckles can be removed with "Mercolized Wax" but the skin comes off along with the freckles.

We further believe it is a vicious practice to sell poor people who can spare but little money for medical attention drugs or chemicals at prices far in excess of their real value, and such business is the more to be condemned because the facts are concealed behind misleading and disguised names. It is bad enough to sell "Clearola" as a skin treatment, but the practice becomes vicious when by virtue of a non-descriptive name one cent's worth of sulphur sells for fifty times its actual value.

We hope this information about Medical Frauds and unfair dealings with the sick and ignorant may be given wide publicity. The State Board of Health will send the circular to all who can make use of it and who may be able to pass along to others the data it contains. For additional information concerning fraudulent preparations, address,

H. E. BARNARD,
State Food and Drug Commissioner
State House, Indianapolis Ind.

Absorbit.--Manufactured by the Von Vogel Laboratories, Chicago, Illinois, and sold under the claim that it "absorbs perspiration and odor." A twenty-cent package contains about two cents worth of the following mixture:

Boric acid	18 parts
Magnesium carbonate	40 "
Alum	10 "
Calcium carbonate	22 "

Absorbine, Jr.—According to The American Medical Association the following formula is practically identical with Absorbine, Jr.:

Oil of wormwood	4 parts
Oil of sassafras	1 "
Menthol	1 "

Acetone, sufficient to make 100 parts.

The amount of solution contained in a dollar bottle is possibly worth one-tenth that price.

Adlerika.—A very strong purge, depending for its action on epsom salt and aloes, that is both dangerous and fraudulent. The contents of a dollar bottle are worth approximately four cents.

Almazoin.—H. S. Petersen and Company of Chicago, Ill., put up three cents worth of the following mixture in an attractive package and sell it for fifty cents under the claim that it is "fine for beautifying the arms, face and neck."

Borax	27%
Magnesia	23%
Gum tragacanth	40%

Alpen Seal.—The Alpen Chemical Company, of Chicago, manufacturers of this preparation, claim that "it increases woman's power." This claim, of course, is meaningless and is doubtless used to surround the preparation with mystery. Alpen Seal is a solution of oil of cinnamon, glycerine, saccharin and vegetable extractives and is sold at the rate of fifty cents for two cents worth of ingredients.

Amarol.—A so-called complexion beautifier, manufactured by the F. W. Scharff company of Chicago, that contains 95% epsom salt and five per cent borax. It sells for fifty cents although the ingredients are worth but one.

Am-O-Lox Ointment.—This is an ointment with a vaseline base and contains about twelve per cent zinc oxide and five per cent salicylic acid. The materials that compose a fifty cent package are worth but five cents.

Am-O-Lox-Prescription.—This preparation is essentially a one per cent solution of salicylic acid in water and alcohol that is flavored with oil of wintergreen. The contents of a dollar bottle are worth about ten cents.

Am-O-Tone.—That anyone would be so foolish as to pay seventy-five cents for five cents worth of borax is rather hard to believe, yet this is precisely what many do when they buy Am-O-Tone to use as a "dry shampoo."

Anazyme.—According to the manufacturers of this preparation, the Maltbie Chemical Co., of Newark, N. J., it "makes an excellent gargle for tonsilitis." It consists of borax 50%, alum, 26% and boric acid 24%. In addition to being somewhat incompatible, it is sold at the rate of fifty cents for three cents worth of common drugs.

Anti Freckle Lotion.—E. B. Gustin manufactures this preparation in Logansport, Ind., and guarantees it to remove freckles. Inasmuch as it is a simple solution of corrosive sublimate, we will not deny his claim but rather supplement it by adding that the skin and some flesh will follow the freckles into oblivion.

Ascatco.—A poisonous solution of arsenic and opium that will not cure asthma as advertised.

Bad-Em-Salz.—"A substitute for mineral water" is the claim made by the American Laboratories, Philadelphia, Pa., for their product Bad-Em-Salz. It consists of the following:

Salt	13%
Glauber's salt	42%
Baking soda	36%
Cream of tartar	9%

and is sold for a quarter of a dollar. The actual value of the ingredients is about two cents.

Barbo Compound.—A mixture of sugar of lead 28%, sulphur 17%, Glauber's salt 16%, and calcium chloride 14% that is advertised to remove dandruff and "scalp humors." Cleansing the head with soap and water also removes dandruff and costs but a trifle. Why pay fifty cents for two cents worth of such stuff as Barbo compound.

Barkola Compound.—A solution of potassium acetate, licorice and glycerine advertised by the manufacturers, the Old Fort Chemical Company, of Fort Wayne, Ind., as "a powerful diuretic, blood purifier and tonic." The contents of a fifty-cent bottle are worth two cents.

Beecham's Pills.—According to the British Medical Association, these pills consist of aloes, powdered ginger and soap. One half cent would be a high price to pay for the ingredients of a twenty-five cent box.

Berledets.—Berledets are composed of the following:

Boric Acid	58%
Sugar	15%
Starch	21%
Water	6%

The Berledet Company of Chicago is responsible for these foolish tablets and sells them for fifty times the value of the ingredients.

Beta Canthol.—A so-called hair tonic manufactured by the F. W. Scharff Company, of Chicago, that contains alcohol, resorcin, menthol, beta-naphthol, and quinine. A bottle which costs seventy-five cents contains about seven cents worth of this mixture.

Beta-Quinol.—This preparation is sold by the Cooper Pharmacal Company, of Chicago, with the same claims that are made by the F. W. Scharff Company for their product Beta Canthol. They are practically identical in composition and further comment is therefore unnecessary.

Bisurated Magnesia.—As an antacid "Bisurated Magnesia" is probably of some value but why pay fifty cents for it when four times the amount of baking soda may be purchased for five cents?

Boro-Listor.—Manufactured by F. W. Scharff Company and "recommended for catarrhal conditions, lotion in wounds and to check perspiration." It consists of five cents worth of boric acid with a trace of eucalyptus and is sold for seventy-five cents.

Borothol.—An "Eczema Remedy," also manufactured by the F. W. Scharff Company. It consists of Sodium Thiosulphate, known to photographers as "hypo", 59%, borax 15% and water, included in the crystals of the other ingredients, 26%. The contents of a seventy-five cent package are worth about two cents.

Bromo Quinine.—These tablets contain nearly forty per cent acetphenetidin, and therefore are dangerous heart depressants.

Bromo Seltzer.—An effervescent mixture containing a strong heart depressant and therefore dangerous.

Brovene.—Under this name, The Brovene Company of Detroit, induces some people to pay seventy-five cents for five cents worth of borax. The claims and composition of this preparation are almost identical with those of Am-O-Tone.

Brownatone.—This preparation is a hair dye that contains salts of iron and copper together with an organic compound that is probably gallotannic acid. The contents of a twenty-five cent package are worth possibly one cent.

Calocide Compound.—A very cheap mixture of common salt, borax, alum and a small amount of tannin. The contents of a twenty-five cent package are worth approximately two cents.

Canthrox.—If we condense the elaborate statement of the manufacturer that Canthrox "gives to the hair that exquisite fluff and wavy softness that will insure a lovely growth," we find that he means that it cleanses. Obviously we do not deny this claim, but prefer to buy soap as soap at soap prices and not Canthrox at twenty-five times its actual value.

Capthol.—Another of the F. W. Scharff Company's preparations that is claimed to benefit the hair. A seventy-five cent package contains three cents worth of the following mixture: Borax 43%, Corn meal 57%.

Capudine.—This solution contains antipyrin, caffein, salicylates, bromides and licorice. In common with all other headache "dopes" its use is dangerous.

Casca Royal Pills.—A mixture of sulphide of lime, capsicum and a trace of belladona, that was declared misbranded by the federal authorities when sold under the original name "Castor Oil Pills." A twenty-five cent package is worth but two cents.

Castoria.—The Journal of the American Medical Association, in summarizing the patent of this preparation, which has now expired and is public property, states that "it appears to be a syrup containing an aqueous extract of senna with aromatics." The continued use of senna by an adult is dangerous, but for infants, as Castoria is advertised, it is doubly so.

Citrox.—This "Eczema Remedy" consists entirely of sodium thiosulphate, otherwise known as the photographers "hypo." It is sold for fifty cents a package, the contents of which are worth but two.

Clearola.—G. W. Carpenter, of Jeffrey, N. H., has discovered how to sell one cent's worth of sulphur for fifty. His method consists of putting it in a pasteboard box, calling it Clearola and advertising that it "whitens the skin."

Coconide.—Coconide is a mixture of 83% borax and 17% soap. The manufacturers, the Montgomery Chemical Company, Dayton, Ohio, claim it to be "remarkable for the lustrous fluffy nature that it imparts to the hair." This is essentially the same claim as that made for Canthrox and as we stated then, it is much cheaper to buy soap as such and at its normal price.

Crystos.—How a mixture of salt, borax and boric acid "restores brilliancy and expressiveness to dull eyes" is beyond our comprehension. Such, however, is the unwarranted assertion of H. S. Petersen and Company concerning Crystos, which enables them to foist two cents worth of these ingredients upon the public for fifty cents.

Cuticle Acid.—This preparation is manufactured by Richard Hudnut, of New York City, and is a 2% solution of oxalic acid in alcohol and water. The ingredients of a twenty-five cent package are worth about one cent.

Cuticura Ointment.—The British Medical Association reports on this product as follows: "It consists of a mixture of hard and soft paraffin, slightly perfumed with rose and colored green." In our analysis, also, no other ingredients could be detected and we must conclude that the purchaser of this salve pays an outrageous price for vaseline.

Dandru-Cide.—Advertised by Ward and Company of Chicago, as "The world famous dandruff destroyer." It is entirely sal-soda and a one dollar package contains three cents worth.

Delatone.—This powder is typical of that class of preparations called depilatories that are used for removing hair. They depend for any action they may have upon an alkaline sulphide such as sodium, calcium or barium and the principal objection to them is the extravagent price charged. This particular one is composed of barium sulphide 7%, barium sulphate 7% and starch 85%. The ingredients of a dollar package are worth about one cent.

Delol.—A depilatory manufactured by the F. W. Scharff Company which contains:

Barium Sulphate	14%
Barium Sulphide	14%
Sulphur	4%
Calcium Carbonate	3%
Zinc Oxide	17%
Starch	48%

(For remarks see *Delatone.*)

De Miracle.—A depilatory solution of sodium sulphide in water. The contents of a dollar package are worth but one or two cents. (See *Delatone.*)

Deodorizing Cream.—A simple zinc oxide ointment that H. Hatten of Chicago claims "Destroys and neutralizes the odor of perspiration." The ingredients are worth but three cents yet are sold for twenty-five.

Depilatory.—This powder is manufactured by H. Hatten of Chicago and contains:

Sulphur	7%
Barium Sulphate	25%
Barium Sulphide	21%
Calcium Carbonate	10%
Starch	37%

(See *Delatone.*)

Depilatory.—Harriet Hubbard Ayers of New York City also manufactures a depilatory that has the following composition:

Barium Sulphide	32%
Starch	68%

(See *Delatone.*)

Doan's Kidney Pills.—According to the British Medical Journal, similar pills contain potassium nitrate, hemlock pitch, oil of juniper and powdered fenugreek. A box containing forty pills is sold for sixty-six cents and is worth one.

The excessive price charged for this preparation is not its worst feature as the insidious advertisements cause the sufferer to delay the physician's attention to the very serious kidney diseases.

Dorothy Vernon Shampoo.—This preparation is put out by the Jennings Company of Grand Rapids, Michigan, and consists of the following:

Soap	78%
Borax	22%

It is therefore very similar to Coconide and remarks concerning the latter are equally applicable to it. The contents of a fifty cent package are worth about two.

Eckman's Alterative.—Collier's Weekly recently tabulated the patent medicines that had been taken by the patients of a hospital for the tuberculous prior to their admission and found that more had consumed Eckman's Alterative than any other fake. When we learn that this fraudulent mixture of cloves, alcohol and calcium chloride sells for two dollars a bottle and that each patient probably takes ten to twelve bottles, we must realize that the public is paying quite a bonus for its patients in the tuberculosis hospitals.

Eggol.—A twenty-five cent package of this product contains two cents worth of soap, borax and salts of tartar in the proportion of forty-three, thirty-six and twenty-one parts respectively. It is closely akin to Canthrox in composition and excessive price.

El Rado.

Sodium Sulphide	5%
Glycerine	10%
Water	85%

Such is the composition of the Pilgrim Manufacturing Company's depilatory "El Rado."
(See remarks concerning *Delatone.*)

E-Ru-Sa.—The falseness of the statement of the manufacturer that "E-Ru-Sa removes piles or $50.00 paid" is clearly demonstrated by analysis which reveals this preparation to be a mixture of charcoal, sulphur, tannic acid and vaseline. A tube costing one dollar is filled with three cents worth of this mixture.

Fat Off.—This silly product of M. S. Borden, Brooklyn, N. Y., is soft soap. When sold as Fat Off, five cents worth rises in price to a dollar and a half.

Father John's Medicine.—We find this preparation to consist approximately of one third cod liver oil, one third water and one third balsam tolu and emulsifying agents. The United States District Court has declared this stuff misbranded because it is not "without an equal as a body builder, health food and for consumption, coughs, colds, croup, lagrippe, pneumonia, whooping cough, bronchitis, asthma, night sweats, catarrh, rickets, thin blood, hoarseness and weak voice."

Fluid Balmwort.—By means of the impossible claim that Fluid Balmwort "cures chronic bedwetting" the Prescription Products Company induce some irrational people to pay fifty cents for two cents worth of potassium acetate, glycerine and vegetable extracts.

Flowers of Oxzoin.—"Unsurpassed for restoring a youthful appearance" is the untruthful claim made by the To-Kalon Manufacturing Company for this product. It consists of three cents worth of the following mixture and is sold for fifty cents:

Zinc Oxide	22%
Glycerine	18%
Water	60%

Fluid En-Ser-Ol.—Fluid En-Ser-Ol is a solution of camphor, oil of cinnamon and water. The infinitesimal cost of the ingredients, which sell for one dollar when called En-Ser-Ol, is entirely commensurate with its value as a "catarrh cure."

Fruitola.—Were it not for the suffering involved, the attempt of the Pinus Medicine Company to sell fifteen cents worth of olive oil and a couple of seidlitz powders for a dollar, would be laughable.

Gloriol Balm.—The Leslie Company, of Dayton, Ohio, informs the public that Gloriol Balm "improves and preserves the complexion." One cent's worth of stearic acid, borax, soap and water may exert that action when sold as Gloriol Balm for a quarter of a dollar but under their own names we deny their ability to materially improve nature.

Gloriol Glowene.—One of the few preparations advertised truthfully. Since it consists of softsoap, no one will deny that it is a "skin cleanser" but we can not understand why anyone would pay twenty-five cents for two cents worth when called Gloriol Glowene.

Gloriol Wavolene.—Two cents worth of camphor, gum arabic and potassium carbonate, dissolved water and sold for fifty cents.

Grace's Mineral Salts.—Among the many ridiculous powers claimed by The Grace's Mineral Salts Company of Evansville for their product is the following: "Is the fastest blood maker in the world." It contains forty-five per cent ordinary baking soda, thirty-eight per cent salt and seventeen per cent rochelle salt and is sold for ten times the value of the ingredients.

Hall's Catarrh Cure.—Potassium iodide, apparently, is the very life of a host of patent medicines that are advertised to cure almost anything from barber's itch to rheumatism. We have found it in socalled "cures" for consumption, eczema, syphilis, asthma, pneumonia, dropsy and now catarrh for it is the principal ingredient of Hall's Catarrh Cure. Potassium iodide no doubt has value in some diseases when properly administered but most of the wonderful virtues ascribed to it by the patent medicine manufacturers, when sold under a coined name, are impossible.

Hairwand.—Other mixtures of similar composition "modestly" claim to be only "beautifiers," while the Leslie Company sells Hairwand as a "hair restorer." This statement is, of course, false and as the preparation is a mixture of salt, borax and sodium salicylate a fifty cent package is worth but two in actual value.

Hays' Hair Health.—This combination is also sold under the false claim that it is a "hair restorer." It is manufactured by the Plaito Hays Specific Company and is a mixture of sugar of lead 1.5%, sulphur 1.5%, alcohol and water. The contents of a fifty cent bottle are worth but five.

Heaston's Rheumatic Remedy.—Under this name, the Huntington Remedy Company induce people to pay fifty cents for two cents worth of sal soda dissolved in water.

Hyomei.—We quote from the Journal of the American Medical Association in regard to this stuff as follows: "The chemists of the British Medical Association analyzed this humbug and reported that it had essentially the following composition:

Oil of Eucalyptus	80%
Alcohol	10%
Liquid Paraffin	10%

There was also a trace, apparently, of creosote in the mixture. Of course, this mixture never cured anything, unless it was the impecuniosity of its exploiter."

Jad Salts.—This conglomeration is labelled to contain citric and tartaric acids, sodium phosphate, potassium bicarbonate, sodium bicarbonate, sodium chloride, lithium carbonate and hexamethylenetetramine. With the exception of the last two, which are present only in exceedingly small quantities, these ingredients are of the cheap and common variety. The contents of a fifty cent bottle are not worth ten cents.

Kardere.—Claimed by the manufacturer, H. S. Petersen and Company of Chicago, to be a rheumatism cure. It consists of:

Cane Sugar	84.71%
Quinine Sulphate	4.55%
Tartartic Acid	6.45%
Iron Compound	4.29%

This mixture, in addition to being useless in rheumatism, is exorbitantly sold for twenty-five times the cost of the ingredients.

Kargon Compound.—The purchaser of a bottle of this hodgepodge finds the following statement in the accompanying circular: " As an act of humanity, recommend this to your suffering relatives." It seems to us that the "act of humanity" would affect the manufacturer more than the "suffering relatives" as additional unearned profits would then be added to his exchecquer. The "compound" sells for fifty cents and contains four cents worth of potassium acetate, alcohol and vegetable extracts.

Kintho Beauty Cream.—The U. S. Department of Agriculture analyzed this product and found it to contain ammoniated mercury 14.72% and bismuth sub-nitrate 5.78%. They then condemned it as misbranded for the reason that it was not "absolutely harmless" as declared by the manufacturer.

Kosine.—This stuff sells for $1.50 a pint although the contents have an actual value of not more than ten cents. It is sold as a "reliable remedy for Epilepsy," although there is no drug known that will cure this disease, and depends for its action on sodium bromide, ammonium bromide and antipyrine.

Kulux.—Falsely advertised as a"skin food" by the Kulux Manufacturing Company, of Rochester, N. Y. It is a simple mixture of the following substances that is worth four cents and is sold for fifty cents.

Zinc Oxide	7%
Bismuth Sub-Carbonate	5%
Glycerine	10%
Water	76%

Limestone Phosphate.—Chemically, there is no such compound as limestone phosphate and this name apparently has been used in the advertising to mislead the public into the belief that they were buying an unfamiliar product with exceptional medical qualities. On the label of the package, however, the word "BRAND" appears between "limestone" and "phosphate" and the pure food law is therefore not violated. Analysis shows this "hot water assistant" to be a common and cheap effervescent mixture, depending for its principal action on ordinary sodium phosphate. The contents of a thirty-five cent can are not worth five cents.

Lung Germine.—A four per cent solution of sulphuric acid in water and alcohol. The cruelly vicious practice of dosing the unfortunate sufferer from tuberculosis with this mixture is almost beyond comment. Needless to say five dollars worth of "this treatment" has a value of less than fifteen cents.

Luxor.—A simple mixture of boric acid and zinc oxide advertised by H. S. Petersen and Company as an eczema remedy and sells for twenty-five times the value of the ingredients.

Magnesurate Compound.—According to the manufacturers of this combination, it "corrects heartburn and distress after eating." Certainly it does—sometimes—and so also does baking soda. A fifty cent package contains two cents worth of the following mixture:

Sal Soda	20%
Calcium Carbonate	30%
Magnesium Oxide	47%

Magnex.—The Magnex Remedy Company, of Noblesville, Indiana, would have us believe that their product is "Nature's assistant for the blood, liver and kidneys," It is a mixture of sulphur, potassium sulphate, magnesia, magnesium citrate and magnesium tartrate which, although sold for fifty cents, costs but two.

Marmola.—Both dangerous and fraudulent in that dried thyroid gland is the active principle and the contents of a fifty cent package are worth but two.

May-O-Tone.—Even if an equal mixture of epsom salt and borax would be a "protection against tan, freckles and sunburn," we would prefer to buy it as such for about two cents instead of May-O-Tone for fifty.

Mayr's Stomach Remedy.—Geo. W. Mayr formerly claimed this combination would "remove gall stones without operation" but now he modestly asserts it to be only a "stomach remedy." The principle ingredient has always been olive oil, but the powder accompanying it has changed in composition several times as our first analysis showed sodium phosphate, a little later epsom salt and finally rochelle salt. These changes, however, have not affected the price or the approximate value of the ingredients as the former has remained one dollar and the latter fifteen cents.

Mercolized Wax.—The Dearborn Chemical Company advises the beauty seekers that "the new and rational way" to improve the complexion, is to take off the old one with Mercolized Wax. In common with Kintho Beauty Cream and Stillman's Freckle Cream, this ointment contains ammoniated mercury and is therefore harmful. A sixty-five cent package contains about five cents worth.

M. I. S. T. No. 3.—The American Medical Association reports that this preparation apparently is essentially an aloes-mercury mixture and whatever therapeutic power it may possess must be due principally to these drugs.

Modene.—A depilatory with the following composition:

Talc	65%
Magnesia	20%
Calcium Sulphide	9%

(See *Delatone.*)

Mother's Friend.—The Federal Government declared this stuff misbranded because it consisted of oil and soap and therefore would not "shorten the duration of labor" or "assist in the safe and quick delivery." Oil may smooth troubled waters and "soft soap" may be used to advantage under some conditions but we fail to see how either can materially aid child birth.

Nature's Creation.—Several years ago, according to the Journal of the American Medical Association, this concoction was sold as a cure for syphilis. We presume, however, that the tuberculous are more easily duped than the syphilitic, for the preparation is now sold to them under as greatly unwarranted claims as ever before. It is a six per cent solution of potassium iodide in water containing a small amount of alcohol and vegetable extracts, and sells for five dollars although the value of the ingredients is but twenty-five cents.

Neroxin.— A powder containing 55% borax and 25% soap that is sold under the absurd claim of being a blackhead remover. A package containing three cents worth of such a mixture is thus sold for fifty.

Nervine.—A mixture of camphor, glycerine and valerian that is "recommended for nervousness and epilepsy." In this case four cents worth of ingredients are sold for fifty.

Odor-O-No.—A pernicious solution containing 20% aluminum chloride that is sold for fifty cents, although the ingredients are worth but two.

Olive Tablets.—Olive Tablets are advertised as "a substitute for calomel" and depend principally on aloes for any action they may have.

On-Riah.—Another depilatory containing about three cents worth of ingredients that is sold for fifty cents. The composition is as follows:

Barium Sulphide	43%
Talc	17%
Starch	40%

Optona.—By inference, the advertisements of this preparation convey the impression that eyeglasses may be discarded if the eyes are bathed in a solution of Optona. By means of this blatant falsehood, one cent's worth of sodium polyborate is sold for fifty cents.

Orrine.—Fraudulently advertised as a "reliable remedy for the treatment of the liquor habit." It is a simple mixture of 82% sugar, 17% sal ammoniac and an exceedingly slight trace of gold chloride. A one dollar box contains about three cents worth of ingredients.

Othine.—Another dangerous "freckle remover." It contains about five cents worth of ammoniated mercury, a little grease and sells for one dollar.

Parnotis.—Another fraudulent "flesh reducer" that consists of 76% baking soda and 21% Glauber's salt. It sells for fifty cents yet the ingredients are worth but one.

Partina.—Three cents worth of borax put up in package form by the R. Partina Co., of Boston and sold for fifty cents.

Penetrol Concentrated.—This solution made by the Acdine Chemical Company, Pittsburg, is a simple tincture of iodine of one half standard strength. It sells for fifty cents but can be made for five.

Perspi No.—A simple mixture of the following:

Boric Acid	20%
Salicylic Acid	22%
Talc	42%
Calcium Carbonate	10%

The amount of this mixture in a twenty-five cent package costs but two cents.

Perspirine.—Under this name, two cents worth of the following simple combination is sold for twenty-five cents:

Borax	13%
Talc	62%
Zinc Oxide	4%

Peruna.—Several years ago, according to the Journal of the American Medical Association, the federal authorities ruled that Peruna did not contain sufficient medicine to prevent it being used as a beverage. The manufacturer thereupon added a laxative and the sales diminished. This seems to prove that Peruna possesses no medicinal qualities, other than laxative, and is an alcoholic stimulant.

Pinex.—An ordinary cough syrup containing an increased amount of chloroform. A fifty cent bottle is not worth more than five cents.

Pinus.—One of the most ridiculous fakes we have discovered. It sells for two dollars and a half as a cure for rheumatism and consists of five cents worth of turpentine and magnesia.

Plain Yellow Minyol.—Two cents worth of a pasty mass of salt water and grease that sells for ninety cents when called Minyol and advertised to "Promote a healthy, vigorous growth of hair, cure dandruff, itching scalp and falling hair."

Plant Juice.—Plant Juice is a concoction of some twelve different drugs, in a menstruum containing 20 per cent alcohol. It seems that the manufacturer has added a small portion of each of the drugs with which he was acquainted in the vain hope that one of them might have some effect. Since six of them, however, are laxatives, it is evident that its principal action is due to their purging effect and the stimulation from the alcohol. The continued use of Plant Juice is therefore harmful, and the price charged is ten times the cost of the ingredients.

Po-Tassa-Fras.—Practically identical in composition with "Nature's Creation" and the remarks concerning it apply equally to both.

Price's Canning Compound. Boric acid with variations. Sometimes with salt, sometimes with sodium benzoate and sometimes with both but no matter what the variable, the powder is always injurious and illegal when used in food products intended for the market. A dollar's worth of Mrs. Price's Canning Compound is worth about ten cents as boric acid.

Pyroxin. "Makes eyebrows long and silky." Such is the absurd claim made by the Sheffield Pharmacal Company for their product which consists of two cents worth of perfumed vaseline and is sold for one dollar.

Quintone.—Consists of:

Sodium Thiosulphate	80%
Borax	20%

This simple combination sells for seventy-five cents although the ingredients cost but two.

Quinzoin.—

Baking Soda	37%
Quassia Bark	60%
Quinine	trace

By asserting that this mixture "corrects profuse dandruff, excess oiliness and other defects," H. S. Petersen and Company induce some credulous people to buy it at twenty times the value of the ingredients.

Rumo-Sac.—This outrageous fraud is a cheap cloth sack containing about one half an ounce of powdered alum. The cost is one dollar and the method of administration is to wear it suspended from a string around the neck. It is almost inconceivable that any one now lives with sufficient superstitution to believe such nonsense.

Rose Kayloin.—Consists of one cent's worth of sulphur and potassium carbonate. The selling price is fifty cents. It will not eliminate skin troubles as claimed by the manufacturer.

Sanatogen. This so-called "Re-Creator of Lost Health" consists of ninety-five per cent casein and five per cent sodium glycerophosphate. Casein is probably better known as cottage cheese and the other ingredient, although of imposing name, can be purchased for twenty-five cents an ounce. Cottage cheese, no doubt is a good food, but why buy Sanatogen at the rate of $4.50 a pound when a mixture of cottage cheese and sodium glycerophosphate in the same proportion, can be had for thirty cents.

Sargol.—A useless mixture of about three cents worth of sodium, potassium and calcium hypophosphites together with dried albumen, that is sold for one dollar. The manufacturer's claim that Sargol will "add ten to twenty-five pounds of fat in two weeks" is utterly false.

Sarsene.—A concoction for which imaginary claims of "Blood Remedy" are made by the manufacturer. It consists of the extracts of senna, sarsaparilla etc., and is sold for fifty cents a bottle, the contents of which are worth but three.

Sartoin.—The Globe Pharmacal Company would have us believe that this preparation "beautifies the complexion." It is a mixture of boric acid and epsom salt in the proportion of one to nine and sells for fifty cents, yet the ingredients cost but two.

Sayleen.—The name, composition and price of this stuff is a vicious joke. It certainly is "saline" for it consists of nothing but common salt and is sold for a hundred times its actual value under the most unwarrantable claims.

Spurmax.—This powder is entirely epsom salt and sells for fifty cents although it contains but two cents worth.

Saxolite.—"Wrinkles and sagging are corrected and the face feels so refreshed and snug like." So does the manufacturer's purse when silly beauty seekers pay sixty-five cents for three cents worth of alum and epsom salt that compose Saxolite.

Saxo Salve.—An ordinary antiseptic zinc oxide ointment containing sulphur. The ingredients of a fifty cent package are worth about five cents.

Shac.—These wafers, manufactured by Frederic Stearns and Co., of Detroit, are typical examples of those pernicious acetanilid mixtures that are exceedingly dangerous.

S. S. S.—Just what these letters stand for is not clearly set forth on the label or in the circular accompanying the bottle but exceedingly strong inference is given, however, that "Swift's Syphilis Specific" is meant. To mislead individuals infected with a disease worse than leprosy into the belief that it can be cured by such dosing appears to us to be a henious crime against society.

Stillman's Freckle Cream.—The Stillman Freckle Cream Company of Aurora, Ill., manufactures three cents worth of ingredients into this ointment that sells for fifty cents. It is very similar in composition and effects with Kintho Beauty Cream.

Sulpho Solution.—A simple solution of sodium sulphide in water. It is similar to all depilatories and sells for the outrageous price of one dollar. (See *Delatone.*)

Swamp Root.—The British Medical Association reports this preparation to contain 48.9 per cent solids and 10.5 per cent alcohol. Since this amount of solids includes 46.5 per cent of sugar, it is impossible for the concoction to contain more than a slight quantity of drugs. The drug appears to be cascara sagrada, principally, and we must therefore conclude that Swamp Root is but a weak laxative syrup containing ten per cent of alcohol.

Sweeto Powder.

Zinc Oxide	32%
Starch	45%
Talc	21%

Three cents worth of this mixture is sold for twenty-five cents when labelled "Sweeto Powder."

Syrup of Figs.—Contrary to the inference of the label, the active principal of this preparation is not an extract of figs but of Senna. This ingredient is a strong cathartic and its continued use is dangerous.

Tan Lac.—Tan Lac contains extracts of barberry, pareira brava, buckthorn, licorice and gentian together with 18% of alcohol. The principal effect of this concoction, therefore, is simply that of a physic and stimulant. The continued use of it is harmful and the price charged exhorbitant, being ten times the cost of the ingredients.

Thargol Compound.—This is a solution of strontium bromide 18%, calcium bromide 4%, flavored with coumarin and vanillin. A fifty cent package contains ingredients to the value of three cents. Bromides produce a deep stupor and their administration in the hands of anyone but a physician is dangerous.

Therox.—Identical in exhorbitant price and composition with Am-O-Tone.

Thomine.—Thomine is identical in many ways with Sartoin. In fact the only variance we can discover is the more ambiguous claim that it is "for the treatment of the skin" and the price of seventy-five cents instead of fifty.

Tincture Cadomene.—This concoction contains extracts of cinchona and damiana together with phosphorus which is probably in the form of hypophosphites. The statement "gives increased weight, pink cheeks and restores ambition" is an unwarranted exaggeration of the powers of very ordinary drugs. A sixty cent bottle contains about four cents worth of ingredients.

Tiz.—A preparation that contains not more than three cents worth of alum, tannic and salicylic acids yet is sold for twenty-five cents.

Tonsiline.—This preparation is a solution of potassium chlorate and chloride of iron, sweetened with saccharin. Such a mixture as this can be made for fifty cents a gallon, yet by the fake claim that it will cure sore throat, the unwary are induced to buy it at the rate of sixteen dollars a gallon.

Toris Compound.—Claimed by the manufacturer to be a "Rheumatism Eradicator and System Builder" and consists of sugar 67% sodium salicylate 9% and saltpeter 22%. The statements of the manufacturer are decidedly false and misleading. Sodium salicylate may be used in the treatment of rheumatism but it certainly is not an "eradicator" and although sugar is a good food, the amount consumed in taking "Toris Compound" is almost negligible. The ingredients in a fifty-cent package are not worth more than two cents.

Traxo.—A cheap laxative solution of the extracts of dandelion and cascara. It sells for one dollar a bottle, yet the materials of which it is composed are worth but fifteen cents.

Tyree's Compound Antiseptic Powder.—A very simple mixture containing seventy per cent boric acid and twenty-seven per cent zinc sulphate. The contents of a twenty-five-cent package are possibly worth two cents.

Vapo Cresolene.—An ingenious method of selling common cresol for three or four times its value under the name of "Cresolene." Extravagant claims are also made for this very common antiseptic.

Varlex.—Contemplation of this fake "liquor and tobacco habit remedy" would be amusing were it not for the fact that those deluded unfortunates who purchase it are the least able to waste their money. A fifty cent package contains one cent's worth of milk sugar and nothing more.

Vick's Croup and Pneumonia Salve.—A simple mixture of camphor, menthol and essential oils in vaseline. The very name of this preparation is dangerous for the reason that the uninformed will rely upon it and not a physician, for the very dangerous diseases, croup and pneumonia.

Vilane Powder.—Called a "catarrh cure" by the manufacturers and sold for fifty cents although the following ingredients of which it is composed. are worth but two:

Salt	42%
Baking Soda	32%
Borax	14%
Sodium Salicylate	11%

Needless to say it will not cure catarrh.

Vinol.—The Connecticut Experiment Station has made a thorough investigation of the properties of this preparation and a similar one, Waterbury's Metabolized Cod Liver Oil Compound. The investigation is summarized as follows: "The experiments with Vinol and the Waterbury Compound show very conclusively that these cod liver oil wines do not possess the nutrient qualities of cod liver oil and anyone using them as a nutrient in place of cod liver oil is certain to be grievously disappointed in the results. The alcohol and iron or alcohol and malt extract, may show some tonic effects but when strength is needed and actual nutriment is desired some other means is necessary than the use of these cod liver oil wines.

Waterbury's Metabolized Cod Liver Oil Compound.

(See *Vinol.*)

Williams Pink Pills.—A fifty cent box of these pills contains about three cents worth of iron carbonate, salts of tartar, magnesia and licorice. It is singular that the manufacturers of these pills and those of Sargol claim identical results for their respective products, although none of the ingredients of one are present in the other. The only similarity we can detect is the outrageous price charged for the product.

Wyeth's Sage and Sulphur Hair Remedy.—The advertisements of this preparation state that it "imparts color to faded and gray hair"or in other words is a hair dye. In addition to its being sold for ten times the cost of the ingredients, it is dangerous because of the sugar of lead it contains.

Zearo Powder.—This powder is sold for twenty-five cents a package although the contents are worth but two. It is advertised "For excessive perspiration" and has the following composition:

Borax	21%
Zinc Oxide	13%
Calcium Carbonate	15%
Talc	35%

Zintone.—By means of the ridiculous claim that Zintone "makes any skin bloom out in the most angelic tint and purity," the Cooper Pharmacal Company deludes the simple-minded into paying fifty cents for three cents worth of stearic acid, soap and borax.

A REPORT OF THE DAIRY PRODUCTS INDUSTRY OF INDIANA.

A. W. Bruner.

With great pleasure and no little enthusiasm, but with frequent troublesome interruptions, we have been engaged in a special survey of the manufacturing plants of dairy products since January first of this year. In that time we have inspected 594 plants of various kinds pertaining to the business, now grown to enormous proportions in Indiana. Of the 594 places inspected three have burned—two creameries and one ice cream plant. Forty-eight creameries—all of the co-operative type—victims of bad business methods and the encroachments of the centralizer plant have recently gone out of business.

The 132 creameries inspected produced in 1915, 32,266,782 pounds of butter of which 98.2% was from pasteurized cream. Fourteen plants did not pasteurize but have since installed pasteurizing equipment. Indications are that the output for 1916 will be at least 15% greater than last year.

Two hundred and thirty-five ice cream plants made 4,112,332 gallons of ice cream of which more than 92% was from a pasteurized mix. Forty-two of the plants did not pasteurize but these made less than one-thirteenth of the total output. This includes all the small confectioners and druggists who make their own ice cream. All of them however, have either installed equipment for pasteurizing, or are purchasing pasteurized stock or are buying their ice cream already manufactured. The output for 1915 was not more than 60% normal.

One hundred and fourteen milk depots sold last year 14,027,773 gallons of milk, of which 96.1% was pasteurized. Fifteen small plants did not pasteurize.

There are 97 cream stations which have been inspected and from these butter-fat has been shipped out of the state in quantity to make more than four million pounds of butter, all of which should be made into butter in Indiana.

Thirteen plants produced condensed milk to the amount of 2,347,553 gallons. One new plant started at Yorktown, November first with the product from 3,500 cows guaranteed. A grand picnic and free chicken dinner was given on the day before the plant started. This plant is owned by the Western Reserve Milk Condensed Company of Cleveland, Ohio, and is their sixth plant—their first in Indiana.

Two cheese factories inspected manufactured last year 125,942 pounds of cheese, one plant making more than four-fifths of this amount.

The different plants scored as follows:

Kind of Plant.	Number Inspected.	Number Good.	Number Fair.	Number Poor.	Number Bad.
Creameries	132	71	55	5	1
Ice Cream Plants	235	59	124	49	3
Milk depots	114	47	45	18	4
Cream stations	97	18	29	46	4
Condensed Milk Plants	14	11	3	0	0
Cheese factories	2	0	2	0	0
Totals	594	206	258	118	12

Several of the plants are very near the excellent grade. A number of plants miss the grade of good either in equipment or the manner of gathering the stock. All the "poor" places received stringent orders and all the "bad" places were condemned and closed, the "bad" creamery having been prosecuted and compelled to quit the business and give bond not to again engage in the business.

All the plants have by this time been equipped with pasteurization outfits and are doing the work with more or less efficiency.

It is no longer a question of forcing the pasteurization of dairy products—it has been accomplished without the least bit of disturbance or friction. It is now a question of sanitation in some of the plants. This remark applies particularly to the way cream is handled in many of the cream stations. Some of them are models and cannot be improved upon. But in many places cream has been handled in the same compartment with poultry, eggs, junk and in grocery stores. This is unpardonably wrong, and it would help us mightily in our work if the manufacturers' association would go on record against this practice.

My investigation discloses the fact that the milk and cream supply is gathered from about 70,000 farms—that many farms making regular deliveries of milk and sweet cream daily, and of cream for butter one and one-half deliveries per week. It discloses the further fact that the general average is 3.5 cows to the farm. There is room for the producing end on the farm, to be multiplied many times to the mutual benefit of all the people of the state.

Seventeen plants have baths for their operators.

One hundred and nine (109) have sanitary flush toilets. Twenty are in the yard.

Seventy-five have wash and dressing rooms.

One hundred and seventy-five plants have pasteurizers.

One hundred and two plants purchase their product already pasteurized.

We found ten clarifiers, twenty-one emulsifiers and six homogenizers in use.

One hundred and four plants were equipped with sanitary pumps and pipes. All plants not so equipped are directed to install the sanitary type.

Only thirteen automatic registers were found.

Very little is known by the average operator concerning the health of the cattle, or the health or cleanliness of the dairyman, or the sanitary condition of the dairy barn and milk house, though a few exceptional firms are employing regular inspectors for this work.

One whole milk creamery was found in LaGrange county, at Lima.

Three co-operative creameries in the state still survive the onward march of the centralized plants.

About a dozen creameries in the state do not use neutralizer and about the same number do not use a starter.

The big problem is the satisfactory collection of raw material.

The investigation shows Indiana to be a real Dairy State, though the surface of possibilities has only been scratched. It is a big business, with big men engaged in it, and a big future before it, but the biggest thing about the whole business—and the best thing—to my mind, is the big spirit of the operators.

This survey has been, in fact, only a preliminary survey to get acquainted with the operators and a more definite line on the business. But it has already been productive of much good. We expect the follow up visits to show surprising results for the betterment of the industry. The great length to which some manufacturers have gone in the way of equipment and sanitation, the splendid spirit of co-operation they have shown and the "forward looking" vision which all have, and which must be manifest to even the casual observer, augurs for this great, and rapidly growing industry better days, better product, better profit and a better confidence on the part of the purchasing public.

CIRCULAR LETTERS AND LETTERS OF INFORMATION.

To facilitate the enforcement of the several laws, and as well to explain their provisions that manufacturers and dealers may the better comply with them, the department has followed the practice of issuing circular letters. These letters are sent to the person or trade interested and are given general publicity by the press of the state.

During the year past a number of such letters have been promulgated and special notices sent to interested parties. Such notices and letters as are of interest follow herewith:

NOTICE TO CREAMERY OPERATORS, BUTTER MAKERS AND PACKERS AND HANDLERS OF DAIRY PRODUCTS.

I am advised that in some instances creamery operators are purchasing butter on the market or from other creameries and repacking it for sale in their own cartons. This practice is in violation of the Pure Food Law. Unless the butter so packed and sold is made in the plant owned and operated by the person or firm whose name appears upon the package, it is misbranded. When butter is so purchased and packed objection will not be made to its sale if the label reads, "Manufactured for............Creamery Company."

Please see that all labels advise the customer of the facts and that they comply in every particular with that portion of the pure food law which relates to misbranding.

H. E. Barnard,
State Food and Drug Commissioner.

March 15, 1916.

NOTICE TO SALOON KEEPERS AND SOFT DRINK VENDERS.

Saloons and soft drink parlors shall be operated in conformity with the pure Food and Sanitary Food Laws as follows:

All glasses shall be thoroughly washed in running water and sterilized before use.

All food displayed for sale or free lunch shall be thoroughly protected by glass, wood or metal covers.

All knives, forks, etc., shall be washed and sterilized before use, and each patron shall have clean individual dishes and utensils.

All toilets and urinals shall be in rooms separate from bar or dining rooms. They shall be thoroughly ventilated, provided with self closing doors and shall be kept clean.

All beer and pop bottles shall, when emptied, be returned to the case neck down and stored under sanitary conditions until removed.

All persons who handle food or drinks shall be free from disease and shall pass a medical examination to determine that fact. The employment of any person suffering from an infectious or contagious disease is in violation of the Sanitary Food Law and both the employee and employer are liable to fine and imprisonment.

H. E. Barnard.

March 25, 1916. *State Food and Drug Commissioner.*

County, City and Town Health Officers, State Food Inspectors and all other officers whose duty it is to enforce the Pure Food and Sanitary Law, will be governed by this notice.

NOTICE TO ICE CREAM MANUFACTURERS.

No food is more subject to contamination and spoilage than ice cream. The raw product is gathered under conditions which conceal the identity and which, in many instances, subject it to contamination.

Ice cream made from any material which is not of high quality is itself of low grade and unfit for food. The pasteurization of cream and ice cream stock makes the product safe.

> "In the interest of public health and better business, you are hereby ordered to pasteurize all cream and stock used in the manufacture of ice cream and all other frozen products."

Pasteurization shall be deemed to be heating to a temperature of at least 145°F. for thirty minutes or 165°F. for thirty seconds. The holding process is recommended.

This order shall take effect on and after July 1st, 1916.

H. E. Barnard,
State Food and Drug Commissioner.

April 11th, 1916.

TO THE FARMERS AND EGG DEALERS OF INDIANA.

Circular Letter No. 23.

The preventable loss in the quality and value of eggs incurred between the producer and consumer runs into millions of dollars annually in our state alone, and the farmer and consumer have to bear most of the burden; the producer gets less per dozen because every bad or stale egg thrown out by the jobber tends to reduce the purchase price, while the consumer has to pay a higher price for the eggs that finally reach him.

There is no money in any egg save a good egg and when the farmer realizes that he and not the grocer and huckster to whom he sells must stand the loss for bad eggs, he will be as careful of their quality as he is of the quality of his wheat or hogs.

If the suggestions below are followed eggs will be marketed in better shape and will yield a better profit to the producer.

Provide plenty of clean, dry nests for your hens.
Gather the eggs daily in cool weather and twice a day in hot or rainy weather.
Do not wash eggs. Use the dirty and small eggs at home.
Keep eggs in a cool, dry place, which is free from odors.
Don't sell eggs which have been in an incubator.
Market your eggs daily, if possible; if not, every other day.
Don't sell eggs which were found in a stolen nest. Use them at home.
Keep the eggs out of the sun when taking them to town.
Don't keep eggs near oil, onions, etc., as they readily absorb odors.
Kill or sell all roosters as soon as the hatching season is over.

The Indiana Food Law forbids the sale or offering for sale of eggs which are in any degree decomposed, putrid or rotten. Eggs showing spots, blood rings or rots are unfit for food. Egg producers, hucksters and dealers are urged to candle all receipts and to throw out all bad eggs to prevent expense in handling and shipping eggs which must ultimately be discarded.

Food Inspectors and local health officers are charged with the enforcement of the Pure Food Law. All citizens and dealers are requested to report the sale of bad eggs to

H. E. BARNARD,
State Food and Drug Commissioner,
State House, Indianapolis, Indiana.

April 22, 1915.

NOTICE TO CREAMERY OPERATORS AND BUTTER MAKERS.

A resolution has been introduced in Congress which comments upon the unsanitary condition of creameries and instances of the spread of disease through butter are constantly being cited by sensational newspaper writers. Such agitation is detrimental to the dairy industry and the only way to stop destructive publicity is to adopt constructive policies.

I am very glad that the reports I am receiving from Inspector Bruner show that Indiana creameries are, for the most part, sanitary and that they are producing good butter. In fifty-three plants already inspected which manufactured last year 14,468,150 pounds of butter, 97.76% of the out-put was made from pasteurized cream.

Indiana is proud of her dairy industry and her creameries and the manufacturers of dairy products are cooperating to put these industries on even a higher standard.

To accomplish this it is up to the butter makers of Indiana to make 100 per cent, of their out-put from pasteurized cream, and in order that we may do this and so make it possible to publish wisely the statement that all Indiana butter is surely safe, I am issuing the following order:

"On and after July 1st, 1916, the manufacture of butter from unpasteurized cream is prohibited. This order applies to all creameries and commerical dairies producing butter for general public sale."

H. E. BARNARD,
State Food and Drug Commissioner.

April 30, 1916.

INDIANA STATE BOARD OF HEALTH.

Indianapolis, Indiana, July 6, 1916.

Secretary, Fair Association.

My Dear Sir:—

The Health Officers and Sanitary Inspectors find much cause for complaint of unsanitary conditions at the lunch and beverage stands operated at fairs and other places where large crowds gather for brief periods. Before you sell space or concessions at your Fair will you require of the applicant that he meets the following conditions.

Beverages other than hot drinks shall not be sold or dispensed except in paper cups which are used once and then destroyed.

All food stuffs must be thoroughly protected from dust and flies all the time.

Candies, crackerjack, etc., must not be made on the grounds except inside of buildings and then only in rooms set apart for that purpose.

Griddles for frying sausage, hamburger, etc., must be covered. Meats must be kept in good condition by the use of ice. The sale of tainted meats or other unsound food means arrest and cancels all contracts.

All dishes used in dining halls and tents must be thoroughly washed in boiling water and cheap, ignorant, diseased or careless help shall not be employed.

Ice cream cone and lemonade carriers must be covered.

Food handlers must have certificates of good health.

We expect of the Fair Association:

An adequate supply of pure drinking water served through sanitary fountains.

The use of the common drinking cup is in violation of law.

An adequate supply of covered garbage cans which are to be emptied at least once a day and more frequently if necessary.

The toilets and urinals must be kept sanitary, clean and decent. *They must be made fly proof.*

These requirements are all in the interest of the public health. They are all required by law or by rules of the State Board of Health. Will you kindly see to it that your concessioners understand what they are to do and that they do it?

Thanking you for your co-operation, I am

Yours very truly,

H. E. BARNARD,
State Food and Drug Commissioner.

NOTICE TO EGG BUYERS, MERCHANTS, HUCKSTERS, AND OTHERS ENGAGED IN THE PRODUCTION AND HANDLING OF EGGS.

Complaint is being made that that Section of the Pure Food Law prohibiting the sale of decomposed, putrid or rotten food is constantly violated by the sale of bad eggs. You are advised that farmers and dealers who sell, or have in their possession for sale, eggs which are not sound are liable to prosecution for violation of the Pure Food Law. For your own protection buy loss off and handle only candled eggs.

Print and distribute widely the following notice.

WARNING.

BAD EGGS.

THE INDIANA PURE FOOD LAW FORBIDS THE SALE OR OFFERING FOR SALE OF EGGS WHICH ARE IN ANY DEGREE DECOMPOSED, PUTRID OR ROTTEN BY

Paragraph 4, Section 2, of the Law which reads: An Article shall be deemed as adulterated: In the case of food * * *

If it consists in any proportion of filthy, decomposed, putrid or rotten animal * * * substance.

Section 4 makes it the duty of all peace and health officers to seize eggs found to be unwholesome and which are intended for sale or offered for sale.

Section 10 of the Act provides that * * * Any person, persons, firm or corporation violating any of the provisions of this Act, shall upon conviction for the first offense, be punished by a fine of not less than $25.00 nor more than $30.00; for the second offense, by a fine of not less than $25.00 nor more than $100.00; and for the third and subsequent offenses, by a fine of $100.00 and imprisonment in the county jail for not less than thirty nor more than ninety days.

Inspectors of the Food and Drug Department of the State Board of Health and all County, City and Town Health Officers are instructed to enforce these provisions of the law.

Egg Producers, Dealers and Shippers will take Notice that the sale of Bad Eggs, or of Stale or Storage Eggs as Fresh Eggs is in violation of the law and that prosecutions will be instituted wherever evidence of violations can be secured.

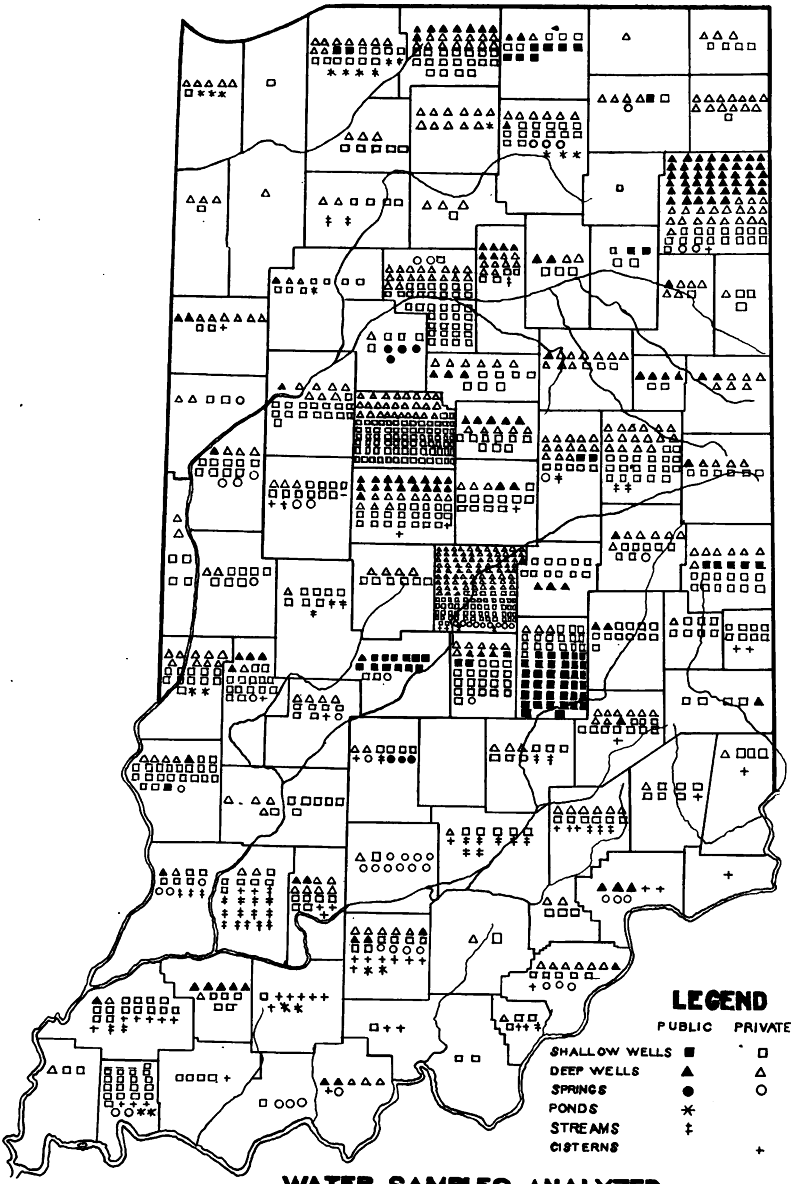
H. E. Barnard,
State Food and Drug Commissioner,
Indianapolis, Indiana.

July 20, 1914.

Report

FROM THE

Water Laboratory



WATER SAMPLES ANALYZED

OCTOBER 1-1915 to OCTOBER 1-1916

GENERAL REPORT FROM THE WATER LABORATORY.

H. E. Barnard, Ph.D.

Sixteen hundred and nine samples of water were analyzed during the year ending September 30th. Thirteen hundred and thirty-three of these samples came from private supplies and were submitted either by the owner of the supply at the suggestion of his physician or by the town or city health officers. Two hundred and seventy-six samples were collected from public supplies either by health officers or water works officials. Of the total number of samples analyzed 998 were found to be of good quality; 618 were condemned as bad and 33 were listed as doubtful. In percentage terms 62% were found to be of good quality. In 1915 63.5% of all the waters examined were classed as good and in 1914, 62% were so reported. 38.4% were bad. In 1915, 38.8% were so listed. From the time the laboratory was opened, the percentage of good and bad waters has remained almost constant. The figures for the past year are almost identical with those of other years. The source of the samples is so varied and so thoroughly represents the water supplies of the state that we believe it may be stated without fear of contradiction that the private water supplies of Indiana are of doubtful quality and that the chances of getting a safe drink of water from the average supply is as two to one. The condition cannot be remedied quickly. The average householder is not easily convinced that his water supply is polluted. Until the health officer of the community deliberately sets about closing bad wells, they will continue to be used.

Of the 1,609 samples examined, 772 were taken from shallow wells, 577 from deep wells, 50 from streams, 56 from springs, 76 from cisterns, 18 from ponds and lakes and 60 from miscellaneous and undetermined sources. But 75 bad wells were found among the 442 deep wells used as private supplies. Four hundred and seventy-six shallow wells were bad, while but 263 were good. Thirty-two bad and 44 good cistern waters used as private supplies were examined. In most cases the cisterns were evidently polluted by washings from roofs. Unless purified by adequate filtration, cistern water is unclean and not potable. Of the 49 spring supplies, 37 were listed as good and 12 as bad. The fact that water flows from the ground in the form of a spring does not insure its quality. Many springs are but surface supplies and are subject to the same forms of pollution as the shallow well.

One hundred and thirty-five deep wells used as public supplies were analyzed and 124 were found to be of good quality. Of the 66 shallow wells examined 52 were good and 14 were reported as bad. Of the 50 stream supplies examined 31 were found to be satisfactory and 19 were condemned. Five of the 7 spring supplies were satisfactory. Ten pond and lake supplies were good, while 8 were classed as bad.

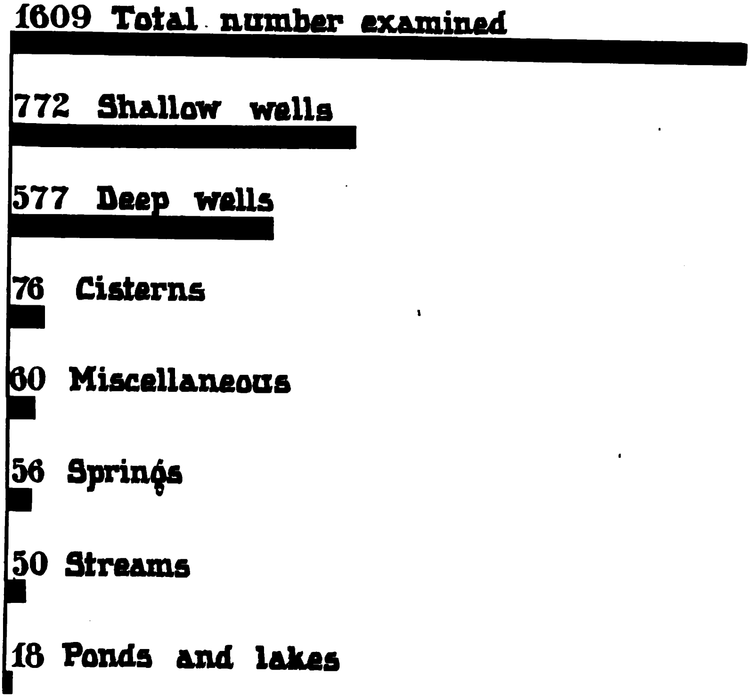
A summary of the quality of the private supplies shows that of the 1,333 private water supplies sent in 736 were reported as good, 564 as bad and 33 as of doubtful quality. On the other hand 222 of the 276 public water supplies were found to be good, 54 bad and none were classed as doubtful.

The report from the Water Laboratory will show in full the studies made of the water supplies of the state. It will include reports of many investigations of sewage pollution of streams and ponds and will detail at length the work of the department in regulating the operation of purification plants.

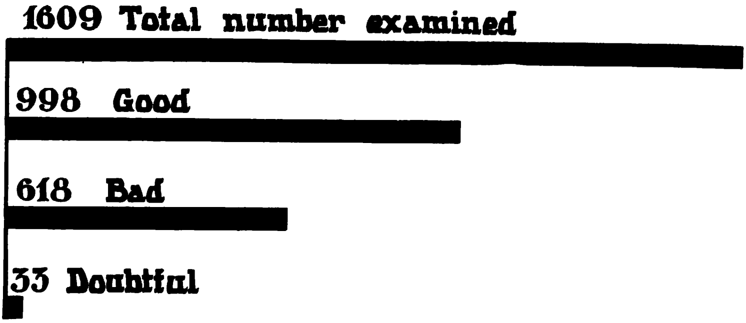
The routine chemical analysis is of value in that it shows changed conditions in water supplies. We believe, however, that the bacteriological examination should be made as a check on the present condition of the water and because of that fact we are reporting this year more bacteriological studies than heretofore.

WATER SUPPLIES INDIANA

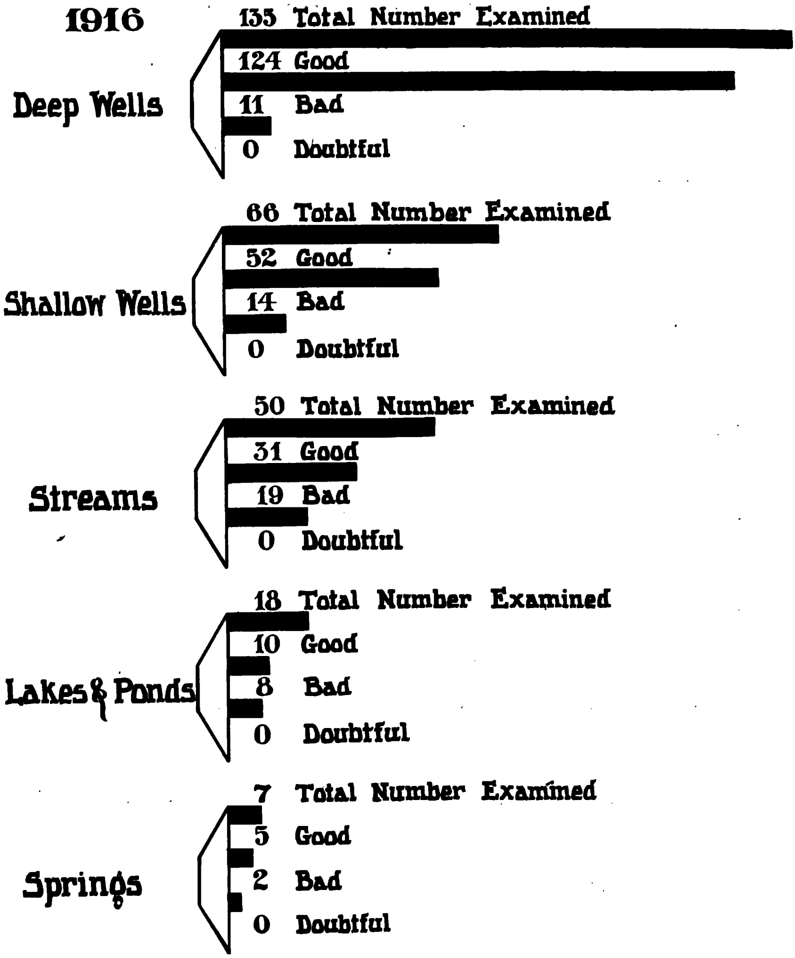
1916.



Quality of Supplies



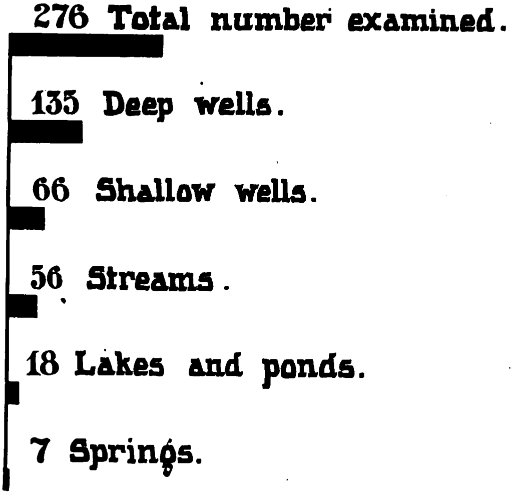
CONDITION OF PUBLIC WATER SUPPLIES INDIANA



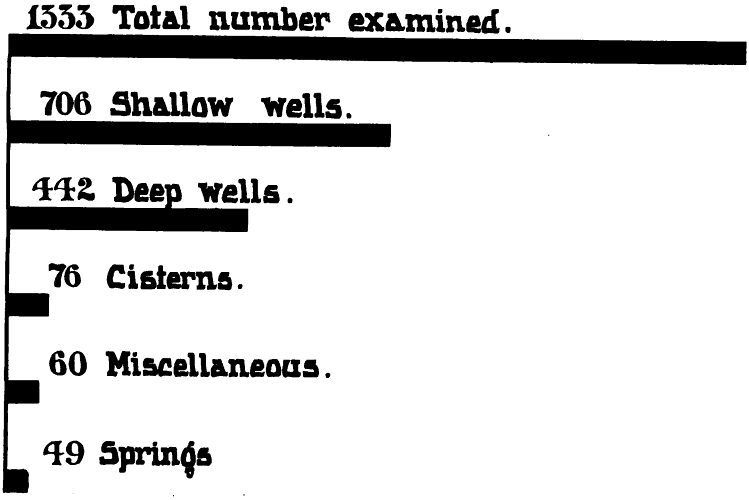
WATER SUPPLIES INDIANA

Public Supplies

1916

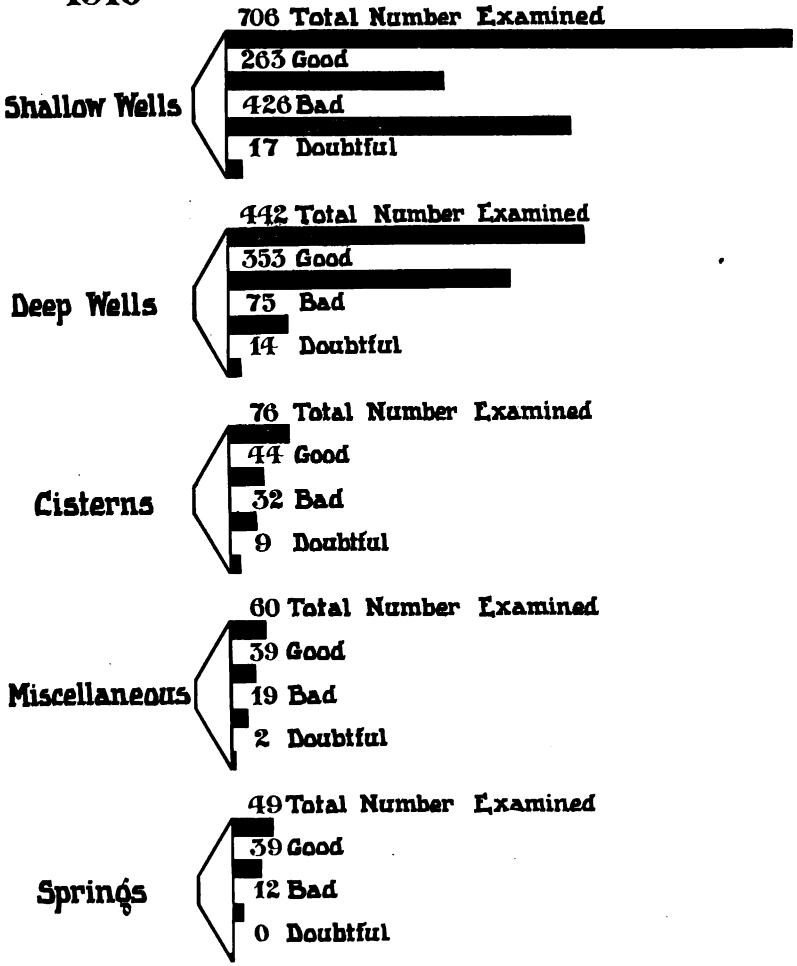


Private Supplies



CONDITION OF PRIVATE WATER SUPPLIES INDIANA

1916



SPECIAL REPORT FROM THE WATER DEPARTMENT

JOHN C. DIGGS, Water Chemist.

For the first few years after the creation of the Water Laboratory the work of the Department was largely confined to the examination of samples of suspected supplies submitted by the health officers and citizens from the various sections of the state. This class of work rapidly grew until it reached a maximum in the year 1914. Since that date, while the number of samples submitted for complete sanitary analysis has remained practically the same, the work of making bacteriological examinations has grown very rapidly until in 1916 more than 500 samples were received. Sixty-three per cent. of this number were from the public water supplies of the state.

From 1908 to 1913 particular effort was directed toward determining the pollution of the various water courses of the state. This work included sanitary surveys of the southern end of Lake Michigan, the Grand Calumet River, the Ohio River, bordering Indiana, The Wabash River and White River. This work showed the very serious contamination of our streams and the dire necessity of the passage and enforcement of laws which would prevent the pollution of the water courses in such a fashion.

In 1914 and 1915 three very complete sanitary surveys of the private water supplies and general sanitation of three cities, Vincennes, Logansport and Noblesville were made. The profit to these cities by the disclosure of bad water supplies and other generally unsanitary conditions will be shown during the next several years by generally improved health conditions.

The work of the Department making recommendations regarding the improvement of public water supplies, the investigation of the operation of water purification plants and the investigation of local unsanitary conditions has gradually grown from the time the Department was instituted until at the present time it forms the major part of the tasks assigned to this division of the State Board of Health.

REPORT OF SAMPLES SUBMITTED FOR BACTERIAL EXAMINATION.

During the year many samples have been received from water purification plants for the purpose of determining the efficiency of the purification processes. The number of such samples has been greatly increased over those sent to the laboratory during past years. Such work is in addition to the very large number of samples examined in the "field" in connection with the special investigation of public water supplies or as a part of the routine of a sanitary survey of a watershed. Officials in charge of water works plants are realizing more and more all the time that it is absolutely necessary to operate a bacteriological control laboratory in connection with purification plants and even where such laboratories are installed, it is highly advisable to occasionally check up their work by submitting samples to the State Board of Health laboratories.

A considerable number of samples have been submitted from sources which supply water to interstate passenger carriers to determine if the supply complies with the bacteriological standard required by the United States Public Health Service.

Various other samples come from the public swimming pools connected with the gymnasiums, and sanitoriums of the state for the purpose of determining the bacteriological condition of such pools.

SUMMARY.

Source of Samples Submitted for Bacteriological Examination:

Samples from Public Water Supplies	340
Samples from Private Water Supplies	143
Samples from Swimming Pools	38
Samples of ice	10
Samples from streams	4
Samples of sewage	1
Total Number of Bacteriological Samples	536

SAMPLES FROM PUBLIC WATER SUPPLIES.

Source	*Number Submitted.*
Indianapolis	83
West Baden	45
Madison	41
Aurora	30
Terre Haute	28
Shelbyville	15
Washington	15
Paoli	13
Mishawaka	12
Bloomington	10
New Albany	8
Princeton	8
Warsaw	8
Bluffton	6

SAMPLES FROM PUBLIC WATER SUPPLIES—Continued.

Source	*Number Submitted.*
Edinburg	6
Wabash	2
Indiana University	2
Elkhart	1
Tipton	1
Evansville	1
Martinsville	1
Hebron	1
South Whitley	1
Argos	1
Valparaiso	1
Total	340

DEEP AND SHALLOW WELLS—1906–1916.

SOURCE.	Deep Wells.					Shallow Wells.				
	Good.	Bad.	Doubtful.	Total.	Per Cent. Unsatisfactory.	Good.	Bad.	Doubtful.	Total.	Per Cent. Unsatisfactory.
Private supplies 11 years	2,668	504	251	3,324	19.7	2,269	2,754	611	5,634	59.7
Public supplies 11 years	1,004	56	84	1,144	12.2	183	61	33	277	33.8
Total supplies 11 years.	3,672	461	335	4,468	17.8	2,452	2,815	644	5,911	58.3

1916.

SOURCE.	Deep Wells.					Shallow Wells.				
	Good.	Bad.	Doubtful.	Total.	Per Cent. Unsatisfactory.	Good.	Bad.	Doubtful.	Total.	Per Cent. Unsatisfactory.
Private supplies........	353	75	14	442	20.4	263	426	17	706	61.3
Public supplies..........	124	11	0	135	8.1	52	14	0	66	21.2
Total............	477	86	14	577	17.7	315	440	17	772	59.2

TABLE SHOWING SOURCE AND NUMBER OF WATER SUPPLIES ANALYZED.
1906-1916.

SOURCE	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	Total.
Deep Wells........	207	221	288	269	341	293	334	592	656	690	577	4,468
Shallow Wells......	380	257	419	478	381	573	616	764	702	569	772	5,911
Cisterns...........	27	18	27	21	32	40	31	59	48	37	76	416
Springs............	26	23	47	51	31	60	59	66	84	84	56	587
Streams...........	18	67	33	38	19	28	66	94	96	47	50	556
Lakes and Ponds...	8	18	36	19	17	21	42	22	27	23	18	251
Miscellaneous......	18	15	68	46	......	38	16	14	32	70	60	377
Totals........	684	619	918	922	821	1,053	1,164	1,611	1,645	1,520	1,609	12,556

REPORT OF SANITARY SURVEYS AND INVESTIGATIONS OF PUBLIC WATER SUPPLIES.

JOHN C. DIGGS.

During the year ending September 30th a total of 39 investigations were made by the Water and Sewage Department. Seventeen of this number were made in answer to petitions of health officials and officials of water works plants who either doubted the quality of their public water supply, desired advice in regard to the operation or improvement of a water works purification plant, or wished investigations of a condition which they believed a possible menace to the public health of the community. Many of these investigations were completed with the inspection of the water plants and in some cases the collection of one or more series of samples which were examined in the laboratories located at Indianapolis. Two investigations, however, the sanitary survey of the summer resort located at Lake Wawasee and the study of the watershed of the chain of lakes which furnish the supply of water for Valparaiso, included the establishment of a chemical and bacteriological laboratory in the field in which samples were examined immediately after collected thus eliminating the difficulties resulting from the shipping of samples long distances.

Twenty-two investigations of public water supplies were initiated by the department in the belief that the state should exercise more rigid supervision over water purification plants. Many of these investigations disclosed improper operation of plants and in many cases criminal negligence on the part of the plant operator. A few plants were found in a very sorry state of repair, necessitating for proper operation a complete overhauling of the entire purification machinery.

Information derived from the various visits of the department to the water purification plants emphasized the importance of state control and resulted in the working out and putting into operation a plan whereby the department might be able to keep a closer "tab" on the plant management.

The Indiana State Board of Health has no organized engineering department such as exists in many of our more progressive states. All work of this character has been performed by the Water and Sewage Department in addition to the original work, the examination of water and sewage samples for which the department was created. It is to be hoped that a department which will not only have complete control of the operation of all water and sewage plants, but shall also examine and approve of plans for such plants before they are permitted to be constructed shall be created by the state legislature.

ADVICE TO THE CITY OF LOGANSPORT IN REFERENCE TO THE CONDITION OF THE PUBLIC WATER SUPPLY AND THE OPERATION OF THE FILTER PLANT.

J. C. Diggs.

At the request of the Secretary of the Board of Health of the City of Logansport on November 2, 1915, an investigation was conducted to determine two questions, i e: (1) Is the chemical treatment given the Logansport public supply responsible for cases of rash or skin eruption among children and (2) Is the filtration plant operated properly to produce the most economical results? The second question refers to the sanitary condition of the water furnished, the taste and odor of the water supplied the city and the amount of chemicals necessary to produce a satisfactory water with the present plant.

Investigations and interviews made on November 3, 4 and 5, disclosed that a case of rash on a child 18 months developed soon after the filtration plant was put in operation. The child, apparently healthy otherwise, was bathed in the city water. During the past summer the child was taken from the city for a period of three months and the rash disappeared. Upon the return to Logansport city water was again used and the rash reappeared. Soon afterward rain water was used in bathing with the result that the patient became free from the eruption. The physician attending the case laid the cause of the trouble to the chemicals used in purifying the public water supply.

Upon inquiry among other physicians of the city no other case of rash was found, the cause of which was attributed to the public water supply. However many persons alleged that the use of the water did produce a chafing of the skin.

An investigation at the filtration plant showed that during the summer of 1915 the coagulant, aluminum sulphate added to the raw water varied from .5 to 9 grains per gallon, the larger amount being necessary during periods of very high turbidity of the raw water. Although frequent tests were made, free alum was never found in the water at any time and even should it have been present, it would have been in such small quantities that it could not have caused rash. In addition to the aluminum sulphate, calcium hypochlorite was used at the rates of 10 pounds to 30 pounds per million gallons. In feeding this "hypo" about two-thirds of the dosage was added to the coagulated water as it flowed to the filters and the remainder fed into the suction line as the water left the clear water well. Very probably all of the chemical added above the filters was absorbed before it reached the city mains, but since the water is pumped directly to the consumers there were probably times when undecomposed "hypo" was present in the water as the result of the second feeding of the chemical. At any rate the water almost constantly had the taste and odor resultant from an excessive chemical feeding.

The use of "hypo" in water purification is now a general practice throughout the United States. As far as investigation of literature was able to disclose, no ill effects have resulted from its use in proper dosages. The Public Health Service Report issued by the U. S. Public Health Service under date of October 9, 1914, recommended the use of disinfecting agents in the purification of water supplies. In speaking of "hypo" this report says, "The proper application to a water of the requisite quantities of this disinfectant will bring about a practically complete removal of pathogenic organisms without affecting the water to any noticable extent. The disinfectant later undergoes a chemical change whereby it is converted into a perfectly harmless substance normally present in most natural waters."

In view of the above evidence it does not seem probable that the chemical treatment given to the water at the city of Logansport can result in any harm to persons using it either internally or externally. The water of Eel River is comparatively hard for a surface water, and may, as in the case of hard water, cause a slight irritation of a delicate skin. For that reason the use of such a water may not be advisable in certain cases.

PLANT OPERATION.

From the aspect of the production of a sanitary water supply, records as far as they go, show that the operation of the Logansport filtration plant has been successful. The records kept at the laboratory are, however, by no means complete. Daily bacterial tests should be made on samples of water taken during the various stages of purification. This includes the raw water, coagulated and settled water, water from each filter in operation and tap water. Only by such tests can the efficiency of each unit of the plant be determined. During the month of October, 1915, tests were made on only seventeen days and some of these included tests of the tap water only.

In addition to the above bacterial tests, physical and chemical should be made daily to determine the amount of aluminum sulphate necessary to produce the proper coagulation for most efficient operation. Experiments should be made to determine the most economical amount of chemical for different turbidities. The amount of aluminum sulphate used in the Logansport plant has been exceedingly large. A part of the time it was unnecessarily large because of the failure to clean the coagulating basin at the proper time.

At certain times the feeding of "hypo" has been unnecessarily great. It is recommended that the "hypo" feed into the clear well section be used only at times when the filter effluents are not satisfactory for drinking purposes. An overdose of "hypo" causes objectionable tastes in the city water. Such tastes should be avoided. The amount of chemical should always be sufficient to produce a satisfactory water, but such chemical disinfecting should not be used to the extent of neglecting any detail in the process of coagulation or filtration.

The City of Logansport uses an excessive amount of water. The average per capita consumption approaches 300 gallons daily. This is far in excess of what is actually used, fully two-thirds of this amount being wasted. The cost of operation of the Logansport plant as far as pumping and chemical treatment is concerned will be proportionate to the amount of water used. A concerted effort should be made to cut down the great wastage by consumers.

A recommendation was made in an earlier report from this office that the city of Logansport should procure the services of an experienced filtration engineer, one who is thoroughly familiar with the theory and operation of a filtration plant. Such a move will be a very profitable investment for the city. When it is considered that a change of from 4 to 3 grains per gallon alum feed means a financial saving of nine dollars per day for the city, the above statement may be understood.

The employment of such an expert for only a year or two, until a local man can be trained, is highly advisable. Such a man will, by reason of his past experience understand the troubles of operating a plant under difficult conditions.

The attitude of the public toward filtration in towns where a plant has just been installed is often one of skepticism. This feeling is sometimes augmented through derogatory statements made by doctors of the "old school" and others who know nothing of the process but whose utterances carry weight because of their scientific attainment. The best way to overcome this tendency is to keep the plant at all times open to and in a presentable condition for visitors, and to induce as many townspeople as possible to come and see it.

AN INVESTIGATION OF NUISANCE CAUSED BY SEPTIC TANK EFFLUENT AT GREENCASTLE, INDIANA.

JOHN C. DIGGS.

At the request of Dr. J. M. King, an investigation was made to determine the facts and to advise a remedy in regard to the alleged nuisance caused by the effluent from the septic tank which is a part of the sanitary sewage system of Greencastle, Indiana.

During the last year, the city of Greencastle has constructed a new sanitary sewer system totaling nine and one-half miles of lines. These lines are so laid that approximately 65 percent of the city is accommodated. At the present time, however, not more than 10 percent of the houses are attached. The system includes two septic tanks, each of which has a working capacity of approximately 75,000 gallons. At present, only one is in use.

At the time of the visit to the sewage disposal plant on November 8, 1915, the single tank in use was not working at its full capacity. As a result the bacterial action was allowed to proceed too far resulting in the effluent giving off an offensive odor. This effluent empties into a small branch, through which it flows 3,000 feet to Big Walnut Creek. Some distance below the point where the sewage waste empties, the water and the bed of the branch are colored black by fermenting organic matter. At a distance 2,000 feet from the septic tank the stream has regained its normal appearance.

The condition of the septic tank effluent is at present far worse than it will be after the volume of sewage increases so that the plant may work at its designed rate. But it is highly probable that the branch will continue to be polluted as long as the septic tank alone is used for purification. For this reason it seems advisable that additional purification apparatus be constructed. This should consist of a line of tile leading down the valley of the branch toward Big Walnut Creek and additional purification apparatus such as "sprinkling" filters, "contact" beds or "intermittent" sand filters. The material for the construction of any of these devices can be obtained reasonably cheap at Greencastle. Sprinkling filters or contact beds will require less ground space, but both require more attention and care in operation. Intermittent sand filters can be operated with much less care and in all probability will bring about far greater purification.

THE PRINCETON WATER FILTRATION PLANT.

JOHN C. DIGGS, Sanitary Engineer.

On November 9, 1915, an inspection was made of the newly installed rapid sand filtration plant of the Princeton Water Company, Princeton, Indiana.

The public water supply for the town of Princeton is taken from the Patoka River a comparatively clean stream of water whose chief pollution is that received from the drainage of the agricultural lands on its watershed. On account of the steep slopes of its narrow valley, it is a stream which carried on unusually high turbidity during portions of the year. For this reason filtration is especially necessary for the production of a water supply satisfactory for domestic use.

The water is drawn from a suction well located on the bank of the stream and pumped by a low lift centrifugal pump into a sedimentation basin of approximately 1,000,000 gallons capacity. This basin is baffled so as to bring about entire use of the basin. The lower portion of the basin is baffled to be used as a coagulating basin. This portion is seventy-feet long by twenty-five feet wide by eleven feet deep.

Alum is used as a coagulant. Provisions are made for the addition of lime or soda to the raw water as it goes to the sedimentation basin and as it flows into the coagulation basin.

From the coagulation basin the water flows through a raw water channel which supplies four gravity filters, only three of which are now equipped for service. Each of the filter units has a sand area of three hundred and thirty six square feet and is rated at 750,000 gallons per day. The filtering medium consists of thirty inches of Cape May sand supported by gravel graduated in size. The strainer system comprises cast iron manifolds with two inch galvanized pipes as laterals into which the brass strainer heads are screened. Wash water pressure is obtained from a 40,000 gallon stand pipe located adjacent to the filter plant. Air wash is also provided.

The filtered water is collected in an uncovered, reinforced, concrete reservoir of 1,000,000 gallon capacity. The water is pumped to a standpipe by a 2,000,000 gallon Laidlow-Dunn-Gordon pump which maintains a discharge pressure of 125 pounds and a city pressure of 60 pounds. A "booster" pump located near the city permits a pressure of 130 pounds for use in case of fire.

A laboratory is being installed to assist in keeping the plant working at high efficiency. Examinations made on samples taken from the plant indicate that the plant is producing a satisfactory removal of both bacteria and sediment.

It is highly advisable that a test lasting over a period of a couple of weeks be made upon this plant. Such a test will determine proper rate and time for washing filters, proper dosage of chemicals and assist in determining at what loss of head the plant can be operated economically.

A PROPOSED SANITARY SEWERAGE SYSTEM FOR THE TOWN OF FORT BRANCH, INDIANA.

JOHN C. DIGGS, Sanitary Engineer.

In response to the following request, a preliminary survey was made of the Town of Fort Branch to determine if the construction of a sanitary sewer system would be a feasible installation.

Fort Branch, Ind., Oct. 21, 1915.

"The Town of Fort Branch desires to install a sanitary sewerage system at an early date. Therefore, we, the Board of Trustees of Fort Branch unanimously request the services of the State Sanitary Engineer, believing this to be our best step toward a perfect system.

By order of the Board of Trustees of the town of Fort Branch, Gibson County, Indiana. C. F. HOFFMAN, Clerk-Treasurer."

The town of Fort Branch drains directly into a branch known as the Muddy Fork of Pigeon Creek. This creek may be used as the outlet or outlets in case more than one trunk sewer needs to be constructed.

The entire south and central part of the town, except a small area north of Strain Street and west of the railroad may drain into a branch leading directly to this stream. The portion west of the railroad, north of Strain Street and the remainder of the town north of Vine Street drains north to the branch flowing past the water plant.

The simplest sewerage would carry the waste in these directions. This, however, would call for two or more outlets, a plan which probably would not be most economical in the end.

On account of the low water condition which exists in Pigeon Creek during the dry summer months, it will be necessary that the sewage be purified before being discharged into the stream. Since this is the case every effort should be made to bring the entire volume of the waste to one central point providing it can be done without an extremely deep cut being made through the ridge, which lies along Strain Street and the railroad.

Carefully estimated costs cannot be made until grade lines and other data have been determined.

The next step toward an establishment of a sewerage system is obtaining the services of a competent sanitary engineer who by previous experience will prevent the town spending money for poor work.

Provision should be made for sewage purification. At the present time a septic tank or "Imhoff" tank will probably bring about a satisfactory degree of purification. Such construction, however, should be so made that other purification devices may be added.

THE DRAINAGE OF THE TOWN OF WOLCOTT, INDIANA.

The town of Wolcott, located in the western part of White county, lies in a section of Indiana prairie land which, by reason of its flat surface, is afforded very poor natural drainage. The town lies in a slight depression of the plains through which passes the surface water run off of a tract whose area is roughly estimated at from two to three thousand acres. By the deepening of the channel of a small branch known as Monon Creek, the land lying east of Wolcott has been drained to a fairly satisfactory degree. This dredge ditch formerly received the surface water from Wolcott and the area west through an open ditch passing through the town. Some five years ago, through the joint instigation of the railroad company along whose right-of-way the open ditch flowed and several farmers through whose land it passed, by the consent of the Town Board of Wolcott, the open ditch was closed up and a thirty inch drain of tile substituted for at least a portion of the way to carry off the water. Emptying into this tile drain from the section above Wolcott was a twelve inch tile drain.

Following the closing of this open ditch, the town of Wolcott was visited by several severe floods. During the past year the section of the town lying south of the railroad has been under water four times. At the time of these floods, the water stood in some of the streets to the height of three to four feet, not only causing great financial property loss, but producing a very unsanitary condition by reason of scattering the filth from the numerous privies to the surrounding lots and sidewalks. Such conditions most certainly will lead to the spread of disease.

These floods are probably the result of two factors which by proper correction may be eliminated. First, the 30 inch tile drain is entirely inadequate to remove the water which runs off the drainage basin lying to the west of the town and second, the level of the water in the dredge ditch lying two miles east of the town is so high that the necessary fall of the drain for proper drainage is not afforded.

A drainage ditch intended to remove surface and ground water from land should be of such size that it will carry away water to the depth of three-fourths inches of all surface drained per twenty-four hours. At Wolcott where the tile ditch is laid at a grade of approximately .1 per cent or 5.3 feet per mile, a thirty inch tile would properly care for but 400 acres of land. On the basis that the area from which the flood water is to be removed from approximately 3,000 acres the drainage capacity should be at least seven times as great as it now is. This capacity may be increased by the construction of other, or large tile drains or by means of an open ditch. An open ditch built at a grade of .1 per cent. or 5.3 feet per mile to adequately drain 3,000 acres, should be capable of carrying a stream of water 5.5 feet deep and 7 feet average width.

In addition to the trouble from insufficient size of the drains, information showed that at times of flood in the dredge ditch, the water "backed up" in the tile drain cutting down the fall. If these facts are true, steps may have to be taken which will bring about a lowering of this water level. This may be done by cleaning out and enlarging the dredge ditch.

No steps should be taken until the town has determined through a reliable drainage engineer the exact facts as to the area of the drainage basin above and including the town, the fall from the town to the water level of the dredge ditch during flood season and the advisability of cleaning and enlarging the dredge ditch. After the collection of these data, plans for an adequate system of drainage which will take care of the flood water of the town and surrounding farm lands may be worked out.

THE ICE SUPPLY OF MICHIGAN CITY, INDIANA.

The ice supplied to the citizens of Michigan City is from two sources. One of these supplies is the artificial ice manufactured from distilled water and furnished by the plant of the Dunlap Artificial Ice Company.

Bacteriological examinations of samples from this supply showed an average bacterial count on agar agar at 37° C of 2 per cc. A test for B. Coli and other gas forming organisms showed none were present in 10 cc quantities.

The second supply of ice is furnished by the Phillips Ice Company. This supply is a natural ice cut from the "Basin" of Lake Michigan. By the "Basin" of Lake Michigan is meant the body of water enclosed by the breakwater. This body is shut off from the remainder of the lake by the breakwaters except for a short gap leading out of the harbor. This arrangement permits the harbor water which receives the sewage of Michigan City to enter the basin. The analysis of a sample of water collected from the basin disclosed the fact that this was very grossly polluted by sewage and was entirely unfit for drinking and domestic use.

During the investigation several samples of ice sold by the Phillips Ice Company were examined bacteriologically. These examinations as shown by the accompanying tabulation showed that the ice cut from the "basin" was badly contaminated and entirely unfit for human consumption or any place where it might come in contact with food products.

Contaminated ice supplies, and in fact all ice cut from water which is polluted by sewage is one of the carriers of typhoid fever and kindred diseases. Such an ice obviously should not be used at soda fountains where it may come in contact with the products served, nor should it be used in ice boxes of grocery stores or restaurants where it may touch food products.

BACTERIOLOGICAL EXAMINATIONS OF ICE SUPPLIES OF MICHIGAN CITY, INDIANA.

Bacterial Number	Collected from	Ice Supplied by	Bacteria per cc.	B. Coli.
485	Rudolph Krueger, Vienna Cafe	Phillips Ice Co.	27	None.
486	Chas. Frank, 210 Franklin St	Phillips Ice Co	33	Present.
487		Dunlap Art. Ice Co.	2	None.
488	Faroh Bros	Phillips Ice Co	13	None.
489	Frank Seib	Phillips Ice Co	15	Present.
490	Henry Finske	Phillips Ice Co	21	None.
491	Annex Saloon	Phillips Ice Co	950	Present.

These examinations show that the artificial ice is a safe supply and that the natural ice cut from the "basin" is badly contaminated and very dangerous to the health of the city. If used in connection with any grocery, ice cream parlor or saloon it, undoubtedly, will at times come in contact with the products sold at these establishments and endanger the health of persons who buy from them.

INSTALLATION OF WATER LABORATORY AT AURORA, INDIANA.

The Indiana Public Service Company at Aurora, Indiana, has recently installed a control laboratory to be used in keeping the filter plant in operation at high efficiency. This laboratory was put in operation on April 10, 1916, and instruction given the employees of the Company which would enable them to carry on the proper bacteriological tests of the water.

A full description of the Aurora plant is found in the 1914 report of the Indiana State Board of Health. The inspection made April 10 and 11 indicates that certain changes must be made before operation of the plant can be entirely satisfactory.

The filtration plant at Aurora is comprised of two 500,000 gallon tub filters which are supplied with settled water from two settling tanks which have a combined capacity of 60,000 gallons.

The settling capacity of this tank is entirely inadequate. The small size of the settling basin not only greatly increases the amount of chemical used, but imposes an additional burden on the filters which demand more frequent washings and loss of wash water.

The apparatus used in applying iron sulphate is crude and inaccurate. By the equipment used much chemical is wasted at times and at other times the amount of coagulant is insufficient. Solution tanks should be installed that will permit the feeding of a definite amount of chemical at all times. The condition of the lime feed is the same as in the application of the iron sulphate.

No loss-of-head gages or rate control regulators are in use on the filters. An entirely satisfactory effluent can not be produced until these are installed.

APRIL 14, 1916.

Mr. Robert Engle, Sup't.,
Washington Water, Light and Power Co.,
Washington, Indiana.

Dear Sir:—

My report of the inspection of the public water system of Washington is as follows:

"The many chemical and bacterial examinations show that the filtered water supplied to the public at Washington has in the past year been very satisfactory practically all the time. Occasionally, however, as shown by the analyses of the last ten days, the city supply of water contains B. Coli and other gas forming organisms.

An inspection of the water purification plant was made April 12th to determine the cause of the failure of the plant to remove at all times the objectionable organisms.

In construction, in the whole, the plant is very satisfactory. Two features however, should be mentioned. The method applying the treatment of hypochlorite is very crude, inaccurate and the rate of treatment easily altered. A better arrangement would consist of applying the chemical solution into the discharge of the filters instead of to the settled water from the sedimentation basin. This plan not only permits a more efficient treatment of the water, but will allow proper sterilization with the use of a decreased amount of the chemical.

The apparatus required to bring about this change can be installed at a relative small cost. The equipment will be comprised of a mixing tank and a solution tank. These tanks should be installed in the present chemical tanks room in order that the hypochlorite solution may be fed into the filter discharge by gravity.

As a matter of plant efficiency loss of head gages should be placed in each filter.

Such an installation will permit a great saving of wash water used and will at the same time serve as an index in determining whether a single filter is operating in normal manner.

The recent construction in the sedimentation basin is excellent and brings about not only a better settlement of the raw water with a decreased amount of alum, and permits the filters to be operated for a longer period between washings.

Very truly yours,

JOHN C. DIGGS,
Water Chemist.

INSPECTION OF BOWERY CREEK, NEW CASTLE, INDIANA.

Bowery Creek, a small branch of Blue River, flows through the center of the city of New Castle passing within two blocks of the city square. This stream normally receives the surface drainage of the land within the corporation limits. Its flow is greatly increased during the rainy seasons by the several, storm water and sanitary sewers recently constructed. During such periods the water of the stream rises and, upon receding, leaves a coating of the city's filth spread upon the banks and adjoining lowlands.

Not only is Bowery Brook and its stream-bed a foul smelling and unsightly eye-sore to the city, a breeding place for filth and malaria, but a general nuisance and menace to the public health of the city.

The banks of the stream serve as a resting place for tin cans and a general catch-all for rubbish, garbage and other city wastes. With the additional construction and extension of sewers now under way the branch will receive additional loads of domestic sewage and street washings. These extensions and enlargements of sewers have been necessary because the engineers who laid out the sewerage of the city fifteen years ago did not anticipate the unusual growth which it has undergone during the last few years.

It is obvious that sanitary construction in New Castle has not kept pace with the cities growth and other civic improvements.

The plan of the City Engineer calls for the construction of a large intercepting sewer at its upper end thirty six inches in diameter and at its outfall seventy two inches. This will care for all surface water normally forming in the Bowery Brook and, in addition, remove the sanitary sewage and storm water emptied into the stream by the sewers recently constructed. The plan of the engineer is entirely feasable and if carried out will remove one of the most unsanitary and unsightly conditions found in any up to date Indiana city.

J. C. Diggs,
Sanitary Engineer.

INVESTIGATION OF PUBLIC SPRINGS, WINONA LAKE, INDIANA.

At the request of the Town Board of Winona, an investigation of three public springs located in the Assembly Park, was made on June 1st, 1916. These springs, the Grotto, Studebaker and McIntyre have been closed to public use since November, 1914, as a result of a sanitary survey of the territory lying above the springs.

The three springs, as shown by an earlier report of this department, are located on the side of a bluff along whose upper edge passes a sanitary sewer line. The sewer line is small in size, and doubtless flows its full capacity during seasons when the Assembly is at its height. The danger of a leakage of the sewer into the water-bearing stratum is great. This alone is sufficient to condemn the springs as a drinking water supply.

Additional sources of pollution are from the several residences located on the hill side through which the springs receive this supply of water.

The advantages of a supply of cool spring water are great and many persons are attracted to a region which is fortunate enough to have such a feature, but such an advantage is more than counter-balanced if there is a likelihood that such a supply may be contaminated by sewage. A questionable spring should never be used.

John C. Diggs,
Sanitary Engineer.

June 8th, 1916.

Dr. J. N. Hurty, Sec'y.,
Indiana State Board of Health,
Indianapolis, Indiana.

Dear Sir:—

I have investigated the nuisance at Greencastle as set forth in the enclosed report.

I recommended that an order from the Secretary be sent to Hon. J. W. Cooper, Mayor, Greencastle, Indiana, and Dr. King, Health Officer, directing them to take legal steps to remedy the nuisance caused by the discharge of domestic sewage and household wastes into the box stone culvert in the city of Greencastle.

Very truly yours,
J. C. Diggs,
Sanitary Engineer.

INVESTIGATION OF THE NUISANCE CAUSED BY THE BOX STONE CULVERT, GREENCASTLE, INDIANA.

Upon receipt of a petition from several residents of Greencastle, Indiana, the Indiana State Board of Health ordered an investigation of an alleged nuisance caused by the discharge of sanitary sewage and other household waste into an old box stone drain which passes through a residence district of the city. This investigation was made on June 7th by J. C. Diggs, Sanitary Engineer of the Indiana State Board of Health.

This box stone drain was constructed many years ago and was originally intended to remove the surface water which naturally flowed through the ravine running from the old Episcopal Church to North Water Street. In recent years sanitary sewage and other household wastes have been made to discharge into it.

As a result of this practice the filth which collects in the drain putrifies and gives off a very offensive odor, not only making it very disagreeable to pass by a street inlet emptying into the drain, but greatly depreciating the value of property in that section of the city on account of the unsanitary surroundings.

Greencastle has an excellent ordinance requiring connections with the city sanitary sewer system. A rigid enforcement of this ordinance will remove the entire nuisance and restore to the residents of this section of the city an atmosphere unpolluted by the odor of sewage and other filth.

A careful survey should be made to determine the offenders and corrections should be ordered. If these corrections are not made within a reasonable time (30 days) the city should immediately bring about prosecution. Such legal prodecure may be taken under the recently exacted ordinance of the city of Greencastle or under the health law of the State of Indiana.

INVESTIGATION OF THE PUBLIC WATER SUPPLY HEBRON, INDIANA.

J. C. Diggs.

At the request of the Town Board of Trustees and Health Officer, an inspection of the public water system of the town of Hebron was made on July 25, 1916.

The source of water for the supply is a driven well 1,086 feet deep. The log of this well shows that after passing through 75 feet of clay and sand, a water-bearing and gas-bearing rock formation was struck. The water was highly mineralized and not of sufficient quanity for a public supply. After passing through 100 feet of sand, clay and shale formation rock formation was again entered. At this depth the casing was supposedly sealed into the rock formation and the drilling continued to a depth of about 1,090 feet where a flow of water, bearing large quantities of lime salt and sulphuretted hydrogen gas was obtained. This water, although it occurs in quantities for a public supply, is extremely hard and so highly mineralized with salt and dissolved gases that it is entirely unfit for a public supply. In addition to the mineral content, all samples submitted to the State Board of Health for analysis, including samples collected by the writer, showed the presence of B. Coli. Since it is unreasonable to assume that the bacterial contamination comes from a depth of 1,100 feet, undoubtedly there is seepage of ground water into the well through either a cracked casing or at the point where the casing joins the lower rock formation.

After the completion of the well a horizontal pressure filter was installed under the guarantee that by treating the deep well water with a coagulant and passing it through the filter, a satisfactory water could be obtained. The production of a satisfactory supply from water of the character of the deep well at Hebron is impossible by the use of any device or treatment applicable on the large scale. Money spent on any such plan is wasted.

The single stroke pump used at Hebron plant is not suitable for applying pressure to the city mains, especially when pressure filters are a part of the construction.

The pressure tank at the plant is quite satisfactory for a small supply and the oil engine is satisfactory until electric power can be obtained. An automatic electrically driven pump is the most economical for a plant such as Hebron has.

Steps should be immediately taken to determine the availability of any other source of supply. Should a satisfactory well supply be obtained, the present filter is an unnecessary part of the plant equipment. Should it seem most practicable to use a surface supply, the filter with the installation of a coagulating tank may be available for purification of the supply.

SUMMARY.

The supply of water obtained from the deep well and passed through the pressure filter is highly mineralized and entirely unfit for a domestic supply.

The pressence of B. Coli in the water indicates surface water is reaching the well. Unless this can be cased off or the harmful bacteria removed by the filter, the supply should be discontinued at once as a protection to public health.

INVESTIGATION OF THE PUBLIC WATER SUPPLY ELWOOD, INDIANA.

J. C. Diggs.

At the request of Dr. J. F. Ginn, Secretary of the Elwood City Board of Health, an inspection of the public water system of that city was made on August 1, 1916.

The source of water supply is eleven 5 inch wells varying in depth from 130 to 170 feet. Under ordinary conditions the water is lifted directly from these wells by the pumps which supply the pressure to the city mains. At times when the rate of water consumption is extremely high, during time of fire and hot dry weather, the wells do not supply sufficient water to maintain the proper city pressure. To eliminate this shortage of water, which occurs during the daylight hours in the summer, water is drawn from a concrete reservoir. This reservoir is supplied with water from the wells of the company, the pumping being carried on during the hours when the city consumption is slight, i e. from 11 P. M. to 4 A. M. By this arrangement, a sufficient supply for all emergencies is maintained at all times.

The reservoir used for the storage is of concrete, approximately 119 feet long by 87 feet across at its greatest width. It is 12 feet deep at its center and has a capacity of approximately 1.5 million gallons. The reservoir is emptied once each month when the walls and sides are thoroughly cleaned.

The very serious objection which exists in regard to the public water system is due to the fact that the reservoir is uncovered, and located nearby a railroad line and the public streets. The exposed surface of the water permits contamination by dust, dirt, and soot. As a precaution against the contamination of the city supply, a cover which will exclude all pollution from the air, must be constructed.

By the gradual lowering of the ground water level, it will become necessary in the near future to raise all of the well supply to the reservoir, by air lift before it can be carried to the pumps which supply the city pressure. When this condition occurs, unless the supply is covered, the danger of pollution will be increased.

To construct a satisfactory covering for the reservoir, posts resting on the floor of the basin must support the roof. The installation of this work is not possible while the reservoir is in use. For this reason it seems advisable that this improvement in the plant be not undertaken until about October 1st, after which date the city pressure may be maintained by the pumps working direct from the wells to the city mains.

The quality of the water supplied by the wells of Elwood is very satisfactory and the Elwood Water Company cannot permit the city's supply to be exposed to the dangers of contamination through the air. Considering the fact that construction cannot be commenced at once, 90 days is a fair time limit for the completion of this work.

August 4, 1916.

Dr. J. N. Hurty, Sec'y.,
Indiana State Board of Health,
Indianapolis, Indiana.

Dear Sir:—

I attach to this letter a copy of my report made in answer to the petition from citizens of Shelbyville setting forth a complaint regarding the quality of the public water supply.

The petition reads as follows:

Shelbyville, Ind., July 22, 1916.

"To Secretary, State Board of Health,
Indianapolis, Indiana.

We, the undersigned citizens of Shelbyville, Indiana, do hereby submit the following petition, requesting the State Board of Health to take charge of the deplorable conditions of the water supply to the city, by the Inter-State Public Service Company.

We know the State Board of Health has the power in the control of the water supply of the city, and it should enforce the health laws upon the Interstate Public Service Company for contaminating the city supply of water and compel them to furnish in a reasonable time, an adequate supply of pure water for all purposes.

We demand the immediate removal of the intake pipe line, which carries the raw, river, laden germ water into the city water mains, as a number of sewer lines, running from the Children's Home, Schmaes Factory, the Meley sewage lines, the Dinkey Factory and the Sidlinger Slaughterhouse, all empty their refuse material directly into the river above this intake pipe.

This is a *Health consideration not* a *property consideration.*

There has been already too much delay in efforts of bringing the Interstate Public Service Company to terms and we ask for an immediate solution of the water problem and for a correction of the water supply system for the sake of the health, welfare and comfort of the people of Shelbyville.

We take this measure by which we hope to secure *justice.*"

Very truly yours,
JOHN C. DIGGS,
Sanitary Engineer.

INVESTIGATION OF THE PUBLIC WATER SUPPLY OF SHELBYVILLE, INDIANA.

J. C. DIGGS.

The City of Shelbyville, whose present population is approximately 14,000, had its public water system constructed in 1885. The plant, now operated by the Interstate Public Service Company supplies water through 17.5 miles of mains with an average daily pumpage of 1,100,000 gallons.

The sources of supply are one brick walled curb well 25x36 feet and six 6-inch drilled wells ranging from 38 to 40 feet in depth. The water is lifted from the six drilled wells into the curb well which also serves as the suction well for the plant.

In addition to the above supply, the company has for six and one-half years maintained a suction line to Blue River. This line supplies water to the boilers of the plant and is used in the steam condensers of the various engines used for pumping and electric generation. It also serves as an emergency intake for the public water system for the city supply should the well water supply become inadequate.

Blue River is seriously polluted by domestic sewage and factory wastes above the point of the intake, making the use of water from this source without purification an extreme menace to the public health of the city.

On account of the heavy pumpage, the water level in the wells operated by the company has been lowered several feet. While the supply is sufficient for ordinary usage, the reserve which the plant may use in case of emergency is inadequate to maintain the proper unit of safety. In a city the size of Shelbyville there should be provided a supply for use in case of fire equal to 2.5 times the average daily consumption. The wells of the Company will not produce water at this rate.

On June 29, 1916, a fire occurred in the city of Shelbyville which placed an unusual burden on the public water system. As a result, the water in the suction well became lowered to such an extent that to maintain proper pressure on the mains, the engineer opened the valve which permitted the water from Blue River to be pumped into the city mains. Pumpage from the river continued for about one and one half hours.

During the several days following June 29th, the fire hydrants of the city were flushed in an effort to remove the river water and restore the public supply to its normal condition. The rapid flow of the water in the mains by the flushing caused a high turbidity of the supply in certain parts of the city. Samples examined in the laboratory of the State Board of Health showed that by July 5th the city supply had practically regained its normal condition. The investigation made in answer to the petition was made on August 2nd, 1916. Samples collected by the engineer on that date showed the water to be of a satisfactory character. The bacteria averaged 5 per cc. No gas formers were found on four 10 cc portions.

The practice of a public water system having two sources of supply, one of which is satisfactory, the other contaminated, is very dangerous. The danger of this practice is augmented when a condition exists whereby a potable supply is barely able to care for the regular demand for water and where an unusual condition may result in the use of the polluted supply.

The supply from which the Interstate Public Service Company of Shelbyville may draw is sadly inadequate for a city of 14,000 population. No time should be lost by the corporation under contract to supply good, wholesome water to the city at all times, to see to it that such a supply is made available.

Considering the disaster which may result from pumping polluted water into city mains, it seems proper that should an emergency arise which might seem to demand additional water at any cost, the health authorities should decide the questions as to the propriety of the use of an infected water supply, i e. permission should be obtained from the local health authorities and the public properly warned before such a supply is used.

In view of the conditions as they exist at Shelbyville, it is recommended that the following orders be issued to the Interstate Public Service Company of that city.

1. That the suction line supplying Blue River water to the city pressure pumps be broken either by the removal of the connection suction pipe, or the connecting valve shall be closed and sealed by the City Board of Health and the seal broken only on the order of the Secretary of the Shelbyville Board of Health.

2. The Interstate Public Service Company shall take steps to provide additional and adequate supply of potable water for the City of Shelbyville, Indiana.

INVESTIGATION OF THE PUBLIC WATER SUPPLY OF SHERIDAN, INDIANA.

JOHN C. DIGGS.

At the petition of the Town Board, an inspection was made of the public water supply of Sheridan, Indiana. The petition of the local board of trustees set forth that many complaints had arisen on account of the bad taste, discoloration and high temperature of the town supply.

The public water supply of Sheridan is furnished by a private corporation which operates the plant in conjunction with electric and ice plants. The water is derived from three wells. One is a dug well 28 feet deep by 10 feet in diameter. This well serves also as a suction well for the pump intakes. Water is also obtained from an 8 inch driven well, 173 feet deep. This well is pumped by means of an air lift directly into the suction well. The air lift is operated at the rate of 100 gallons per minute for five hours each day.

The third well is 232 feet deep and is pumped by means of a steam pump at the rate of 75 gallons per minute. Water from this pump goes to the boiler feed tank and to cylinders which are used in cooling the ammonia gas from the ice plant operated in connection with the water and light plant. The water after being used to cool the ammonia pipes flows into the suction well which supplies the town.

A fourth well 12 inches in diameter and 43 feet deep has been constructed but is not yet in use.

The public water supply of Sheridan is a fairly hard water and rather high in iron content. When the water is permitted to stand for some time in the mains, the iron settles out causing a discoloration. During time of excessive warm weather the water becomes warm and acquires a slight taste and odor. It is believed however, that this objection can be entirely removed by more frequent flushing of the fire hydrants. The warming of the water by coming in contact with the ammonia pipes is very slight for only a small portion of the city's supply in thus treated. Such use of the city water supply is in no way unsanitary and cannot possibly be the cause of an illness.

Water is supplied to 185 consumers, 52 fire hydrants are in use. Five miles of mains are laid.

MICHIGAN CITY.

JULY 10, 1916.

The public water supply for Michigan City is taken from Lake Michigan through an intake extending about one mile into the lake. The water supply is subjected to contamination from the city's own sewers and the general pollution of the lake. During the periods of high wind the supply is turbid.

In 1912 a "hypochlorite" treatment plant for sterlization of the city supply was installed. This plant was continued in use until 1916 when it was replaced by a chlorine gas machine. By means of this treatment the bacterial count and sewage organism are kept at a minimum. Qualitative tests for gas forming organisms are made with plantings of 5 to 10 cc portions two or three times each week.

During the month of June 1916, the water works officials permitted their supply of chlorine gas to become exhausted resulting in no treatment of the city supply for a period of ten days. No warning was given to either the local board of health or to the public that the city was being supplied with polluted water supply. The officials cannot be too strongly criticized for such a practice. It is extremely hazardous to trifle with the health of the citizens in such a fashion after they have been led to believe that the public supply was satisfactory for drinking purposes.

It is recommended that the City Board of Health arrange to make more frequent, thorough examinations of the water supplied to the public.

If Michigan City expects to keep pace with other Indiana cities, it will be necessary that the public officials take steps to improve the public supply. This can be brought about only by the construction of long intake pipes or the installation of a modern filter plant. No time should be lost in obtaining the services of a competent engineer who will plan future extensions and improvements of the city's public water system.

GARY.

JULY 11, 1916.

The intake of the Gary Water Company—a private corporation, extends into Lake Michigan 7,500 feet and draws its supply at a distance of 20 feet from the surface in 40 foot water. Water drawn from this portion of the lake is clear at practically all times and far less subject to pollution than the supply of most cities taking their supplies from the lake. Liquid chlorine treatment which was installed during 1915 adequately sterlizes the city supply.

The public supply is examined two times each week in the municipal laboratory. The supply is normally satisfactory. It is recommended that more frequent tests be made of a supply which through the presence of an unusual pollution at the intake or the failure of the sterilization apparatus to work properly, may become the cause of infected water reaching the citizens.

EAST CHICAGO.

The East Chicago water system originally installed in 1894 is comprised of a pumping plant drawing water through a 36 inch intake extending 300 feet into Lake Michigan, a chemical treatment plant and a distribution system of 38 miles of mains.

The pumping machinery consists of one 3,000,000 gallon Laidlow-Dunn-Gordon, one 6,000,000 gallon Allis Chalmers, and two 5,000,000 gallon DeLaval centrifugal pumps.

In 1915 a chlorine gas sterilization plant was installed for treatment of the water which is infected with the sewage of the cities bordering the lake. Such treatment is not satisfactory in producing a potable supply at all times. The water company is at the present time preparing to build a gravity filter plant which will assure a potable supply for the city at all times.

HAMMOND.

July 13, 1916.

The public water supply of Hammond is municipally owned and operated. The intake which extends one and one-fourth miles into Lake Michigan draws water from a section subjected to pollution during certain periods of the year. No sterilization or other purification is provided for treating the public water supply. Within a few years it will be necessary for Hammond to follow the example of other cities which do not have a pure water supply available for public use. A filtration and chemical treatment plant must be installed. Immediate steps should be taken toward safeguarding the health of the city by the installation of a liquid chlorine treatment plant.

The city of Hammond is provided with a public health laboratory in which bacterial examinations of the city may be made. By the findings of the laboratory, the operation of the chemical treatment may be regulated.

WHITING.

JULY 14, 1916.

The public water system of Whiting was built by the Standard Oil Company about 25 years ago. The supply is drawn through an intake extending but a short distance into the lake and subjected to pollution much the same as the supplies of other cities bordering the lake. The lake water is treated with "hypo" but this treatment does not produce a potable supply at all times.

A movement is on foot at the present time to secure a purification plant, preferably a gravity filter plant for the city. It is to be hoped that the plans may be perfected which will result in the construction of such a plant in the near future.

BLOOMINGTON.

AUGUST 5, 1916.

The public water supply of Bloomington is obtained by impounding the surface water falling upon several of the slopes near the city. Experiences during past years have shown that the Mitchell limestone which underlies the surface clay stratum is very soluble. Considerable trouble has been experienced during these years by the failure of the beds of the reservoirs to hold the collected water. On account of the loss of impounded water, the city has on several occasions experienced a water famine during the dry summer months. The surface water in addition to being lacking in quantity has frequently been contaminated to such an extent that it was not satisfactory for drinking purposes until purified by sterilization treatment with hypochlorite.

In 1914, in an attempt to obtain an additional supply of water, a dam was constructed across a small stream which is fed by several springs. This storage reservoir, which is known as Leonard Springs, has a storage capacity of approximately 350,000,000 gallons or practically a year's supply for the city at the present rate of consumption.

A very serious objection to this storage reservoir is the fact that it is located at a point five miles from the city and one and one-half miles from the present pumping station.

A new pumping station is being constructed at the foot of the Leonard Spring dam. The city hopes to be able to pump from this station directly into the city mains. To supply pressure to the city from this station, the water must be pumped through a twelve inch line over several hills and to an elevation considerably higher than that of the plant. This will require an exceedingly high pressure at the pump discharge, one in fact which may be impractical for ordinary use. In such event, it may be necessary to resort to a booster station between the pumping plant and the city.

It is believed from point of sanitation the use of water from one central reservoir is preferable to the collection of the run-off from several water sheds. The storage period will be longer and the liklihood of chance pollution will be decidedly less.

It will be necessary to provide sterilization of the impounded water supply. It is believed that the installation of a chlorine gas sterilization outfit will eliminate much of the irregular treatment which often results when "hypo" is used for sterilization.

The machinery now in use at the pumping plant is comprised of one Laidlow-Dunn-Gordon, crank and flywheel type of 3,000,000 gallons, one Laidlow-Dunn-Gordon direct acting of 2,000,000 gallons, one Smith Vaile of 1,000,000 gallons.

The new pumping plant which is to be located at the Leonard Springs reservoir is to be equipped with a Laidlow-Dunn-Gordon of 1.8 million gallons capacity.

The public water system supplies 1,800 consumers taps. The average daily pumpage is approximately one million gallons per day.

INDIANA UNIVERSITY.

August 5, 1916.

In 1911 Indiana University, located in the city of Bloomington, obtained a supply of water separate from the city public supply by the construction of a concrete dam across a gully about three and one-half miles east of the city. Previous to this date the University had depended on the public system of the city but was seriously handicapped by the inadequate supply.

Since the original installation and construction, the University plant has been enlarged and improved by (1) increasing the capacity of the reservoir and (2) by the installation of pressure filters.

The system as now operated consists of a storage reservoir which, by means of a 40 foot concrete dam, impounds a supply of 40,000,000 gallons. The dam is set in the Knobstone formation, which, after five years experience has shown no tendency to develop leaks such as have been experienced in the reservoirs of the city system which were underlain with a bed rock of Mitchell limestone. The watershed of the reservoir, an area of some 300 acres is entirely controlled by the University which has exercised proper precaution to see that it is kept in a sanitary condition. From time to time the water of the reservoir has been treated with copper sulphate to remove alga growths forming therein.

The water is drawn from the reservoir by two triple Deming pumps and passed through pressure filters to a concrete reservoir of 120,000 gallons capacity located near the University campus. The filters are two 8 foot Kennicott filters. Alum is used as a coagulant.

The water consumption varies from 75 to 90 thousand gallons per day, but is rapidly increasing. To care for future increase, plans are being made for the installation of two additional filters.

Frequent bacterial tests are made by one of the departments of the University.

BEDFORD.

August 5, 1916.

The public water supply for Bedford is taken from the East Fork of White River. The water before being supplied to the city is subjected to purification by sedimentation with alum and sterilization with hypo.

An electrically driven DeLavel centrifugal pump of 2,000 gallons per minute capacity lifts the water from the stream and carries it to the sedimentation basin. The basin is circular in form and baffled to bring about complete displacement. The capacity of the basin is approximately 3,000,000 gallons affording a settling period after coagulation with lime and iron of two days.

The water is drawn from this basin by two centrifugal pumps, one of 1,100, the other 550 gallons per minute capacity. Direct pressure is applied to the city mains. Hypo at the rate of 13 pounds per million gallons is added at the pump suction.

The public system supplies water from 1,300 services and 150 hydrants. Eighteen miles of city mains are laid and the daily consumption is approximately 1,500,000 gallons.

PAOLI.

August 8, 1916.

The town of Paoli is supplied with water taken from Lick Creek. The supply is purified by a pressure filter system installed in the spring of 1915.

The purfication plant is comprised of an 8x20 foot steel coagulating tank and three 8 foot pressure filters. Alum is used as a coagulant. The plant produces a satisfactory effluent, but is compelled to operate at a very low rate when Lick Creek is excessively turbid.

The town of Paoli has two very large consumers, the Monon Railroad which takes about 40,000 gallons per day and a local canning factory which uses 75 to 90 thousand gallons per day when operating. Other consumers use approximately 130,000 gallons.

At the time of the inspection of the plant no alum was being fed into the raw water, it being believed that since Lick Creek was clean no alum would be required. Such a practice is wrong. Alum should be used at all times to remove bacteria as well as turbidity. It is recommended that more satisfactory operation of the plant may be obtained, if a longer period for settling the raw water permitted. The construction of an outside settling and coagulating basin would be of great value to the plant.

WEST BADEN.

August 7, 1916.

The town of West Baden is supplied with water from Lost River. The water after filtration is pumped to a half million gallon reservoir at the top of the hills near the village.

The pumping plant consists of one electric pump of 400 gallons capacity per minute. In the same building are housed two 10x12 horizontal pressure filters. The plant capacity is 500,000 gallons per day. The summer pumpage is about 225,000 gallons per day.

No settling or coagulating tank is provided. Such a tank or basin will greatly add to the efficiency of the plant. Since it is contemplated that this plant be enlarged so as to care for the town of French Lick which does not at this time have a potable supply, it is recommended that the additional construction shall include a settling and coagulating tank which will relieve the strain on the filters during periods when the raw water supply is excessively turbid.

Hypochlorite is used for sterlizing.

WEST BADEN SPRINGS HOTEL.

AUGUST 7, 1916.

The supply of water used in the West Baden Springs Hotel is obtained from Lost River, pumped to a reservoir on a nearby hill and passed through pressure filters to the distribution system below. The old stream driven pumps which have been operated a number of years are to be replaced by an electric driven pump of modern type. The old earthern reservoir is to be supplanted by a circular concrete basin of half a million gallons capacity. The new reservoir will serve both as a settling and coagulating basin with the completion of the new construction. With these changes in construction, the plant should produce a supply of good water.

ORLEANS.

AUGUST 8, 1916.

A public water supply for the town of Orleans was installed in the summer of 1916.

The source of supply is two 8-inch wells, 113 feet and 115 feet respectively. The supply of water is soft and very satisfactory for domestic as well as industrial uses.

Two Cook constant pressure deep well pumps, electrically driven, are used to elevate the water to a 60,000 gallon pressure tank. In case of fire an electric driven booster pump of sufficient size to produce a pressure of 110 pounds may be used. The first two pumps are automatically controlled, the booster pump being controlled from the electric light plant located in Orleans three quarters of a mile from the pumping station. Each pump and motor is very securely housed in a neat, double walled, concrete block and wood, frost proof building.

FRENCH LICK.

August 9, 1916.

The public water system which furnishes a supply for the town of French Lick is owned and operated by the French Lick Springs Company, a private company, which has a contract to furnish water for fire protection and sprinkling purposes only. The supply is taken from French Lick Creek, which is fed by springs and the run-off from the surrounding hills. A dam has been built across this creek so as to form a small storage reservoir from which the water is passed by gravity into two brick cisterns. From these cisterns the water is lifted by an electrically driven Gould pump which is operated at the rate of 12,500 gallons per hour. The water is carried to the top of a hill on which a brick and concrete storage reservoir has been constructed. From the reservoir it flows by gravity into the city mains. During the time of highly muddy water, alum is added to the water as it goes to the reservoir. This throws down a considerable part of the turbidity and produces during the greater part of the year a fairly clear water.

As French Lick Creek is located in a valley surrounded by steep hills, it receives all the drainage from pasture lands and barn yards in this section. The purification treatment now employed is entirely unsatisfactory as a means of producing a potable water supply and the city supply at present cannot be considered safe as a drinking water.

The need of a more satisfactory public supply is all the more imperative in French Lick because of the very unfavorable geological conditions which make difficult the obtaining of a dependable underground water supply.

A surface water such as French Lick Creek supplies, is not satisfactory for drinking purposes, but by the installation of a small filter plant, such as already has been constructed at West Baden and Paoli, a good water may be obtained.

In so far, however, as the West Baden public water system is joined to the mains of the French Lick system, it undoubtedly is true that if the two systems were merged, one filter plant could supply water to the two towns far more economically than could be done by two separate plants. It is highly advisable that the citizens of French Lick take active steps to secure a potable water supply.

JASPER.

August 10, 1916.

The public water system of the town of Jasper was built by the city in the year 1896. The supply was taken from the Patoka River, pumped to a reservoir from which it flowed by gravity into the distribution system.

At the time of the inspection, August 10, 1916, a filtration system was being installed. The plant after completion will be comprised of a pumping plant, two horizontal pressure filters, a storage reservoir and a distribution system.

The pumping plant consists of a horizontal motor driven pump, turbine type, capable of producing a pressure of 90 pounds and a discharge of 350 per minute. The raw water to which is added alum as a coagulant is pumped directly to the lower portion of the pressure filters which serve as coagulating basins. The filters are 8x22 feet with a combined capacity of 600,000 gallons per 24 hours. A feature of the filters is that indicator devices are installed which show rate of filtration for individual filters and rate at which wash water is applied.

The distribution reservoir, built of concrete, has a capacity of 1.3 million gallons.

For distribution, 6.4 miles of mains are provided 10 inches to 4 inches in size. 58 fire hydrants are in use. About 450 consumers taps are in use.

PRINCETON.

August 10, 1916.

The public water supply for the town of Princeton is taken from the Patoka River, a comparatively clean stream of water whose chief pollution is that received from the drainage of the agricultural lands on its water shed. On account of the steep slopes of its narrow valley, it is a stream which carries on unusually high turbidity during portions of the year. For this reason filtration is especially necessary for the production of a water supply satisfactory for domestic use.

The water is drawn from a suction well located on the bank of the stream and pumped by a low lift centrifugal pump into a sedimentation basin of approximately 1,000,000 gallons capacity. This basin is baffled so as to bring about entire displacement. The lower portion of the basin is baffled to be used as a coagulation basin. This portion is seventy-five feet long and twenty-five feet wide by eleven feet deep with a capacity of 240,000 gallons.

Alum is used as a coagulant. Provisions are made for the addition of lime or soda to the raw water as it goes to the sedimentation basin and as it flows into the coagulation basin.

From the coagulation basin the water flows through a raw water channel which supplies four gravity filters, only three of which are now equipped for service. Each of the filter units has a sand area of two hundred and sixty-one square feet and is rated at 750,000 gallons per day. The filtering medium consists of thirty inches of Cape May sand supported by gravel graduated in size. The strainer system comprises cast iron manifolds with two inch galvanized pipe as laterals into which the brass strainer heads are screwed.

Wash water pressure is obtained from a 40,000 gallon standpipe located adjacent to the filter plant. Air wash is also provided. The filter basins are of rather unusual depth, being twelve feet deep and, as a general rule the water level in the filters is about seven feet above the top of the sand layer. This arrangement permits of a continuation of the filtering process for several hours if it should be necessary to stop the river pump.

The filtered water is collected in an uncovered, reinforced, concrete reservoir of 1,000,000 gallons capacity. The water is pumped to a standpipe by a 2,000,000 gallon Laidlow-Dunn-Gordon pump which maintains a discharge of 125 pounds and a city pressure of 60 pounds. A "booster" pump located near the city permits a pressure of 130 pounds for use in case of fire.

MT. VERNON.

August 14, 1916.

The city of Mt. Vernon obtains its water supply from the Ohio River. The supply is purified by means of a gravity filter plant installed in 1903. The filters are four in number, each with a capacity of 500,000 gallons per 24 hours. A sedimentation tank with a capacity of 100,000 gallons is provided for removing heavier solids and permitting coagulation by means of alum. A "hypo" chemical treatment plant was installed in 1916. Weekly bacterial tests are made in a control laboratory located in the plant.

The water is supplied through 12 miles of city mains to 1,200 consumers. The average daily consumption is 650,000 gallons.

EVANSVILLE.

AUGUST 15, 1916.

Evansville built its first public water supply in 1872. In 1912 the system was equipped with a modern filtration plant. The system is now comprised of the pumping station and filtration plant, and 116 miles of mains which supply water to 12,000 consumers.

The Evansville filtration plant consists of three coagulating basins with a normal rating of five hours sedimentation, twelve filters of 1,000,000 gallons capacity each, a clear well with a storage of 1,000,000 gallons capacity, machinery pit, chemical storage room, canal forebays, etc.

The coagulating basins have a total capacity of 2,500,000 gallons, two of which are 1,000,000 gallons each and the third 500,000 gallons. These basins can be operated in either series of parallel, although the former has been found most satisfactory. They vary from those generally constructed in other plants in their extreme depth, which measures 28 feet over all. Since the water is being treated without preliminary sedimentation, a good opportunity has been afforded to determine their efficiency, and the results have been uniformly satisfactory.

The filters are twelve in number and have a filtering area of 388 square feet, with a normal rating of 1,000,000 gallons per each twenty-four hours. The filter beds consist of thirty inches of sand, taken from the Ohio river, which was screened and graded so as to secure an effective size of 0.26 millimeter, and a uniformly co-efficient of 1.83. The gravel, which is of 10-inch depth, ranges in sizes from one-sixteenth of an inch to one inch, and was graded and placed in four layers.

Air is used in washing and is admitted to the beds through 3-8 inch slotted brass tubes placed between the sand and gravel. Each filter is equipped with controller, operating stand and loss of head gauges and the water passes through the controller directly into the clear well, from which it is pumped to the city.

The chemicals used for coagulants are sugar sulphate of iron and hydrated lime, with bleaching powder applied for sterilization.

The pumps which supply water to the filter plant are located in the well of the pumping station. They are of the centrifugal type, steam turbine driven, being manufactured by the DeLaval Company.

A chemical and bacterial laboratory is maintained in connection with the water plant. By means of this laboratory a very careful control is kept of all plants operations.

During the last year, a campaign has been on foot which resulted in the installation of a large number of meters by the consumers. This installation resulted in a considerable decrease in the water consumption.

BOONVILLE.

August 15, 1916.

The water supply of the city of Boonville is obtained from two artificial lakes, one referred to as the old reservoir built in 1896, the other known as the new lake built in 1912. The old lake covers about 24 acres and varies in depth from 6 to 13 feet. The supply of water is obtained from a water shed of limited area. The water shed consists entirely of farm lands and several sets of farm buildings are in use upon it. The new lake covers about 28 acres. Its water shed is limited and like the old is all tilled farm land on which are several sets of farm buildings.

A 10 inch line runs from the old lake to the pumping station from which it is pumped to a standpipe. The new lake delivers water into the old lake as it may be needed through a 6 inch line. The average daily pumpage is about 160,000 gallons. Seven hundred and eighty-three service pipes supply 80 per cent of the dwellings in the city.

In July 1915, the supply became very distasteful on account of the accumulated growth of algae and other plant forms in the lake. Recommendations were made that a temporary suction line be constructed to take water from near the surface of the lake instead of from bottom. This change was made resulting in an immediate improvement in the city supply. Other changes recommended at that time, viz. (1) the construction of a pipe line whereby water could be drawn directly from the upper lake. (2) emptying and cleaning the old reservoir, (3) improvement of the water shed of the lakes, were not carried out.

At the time of the inspection, August 15, 1916, the character of the city supply was very satisfactory. The dam of lower reservoir was in a very bad state of repairs. The oak-faced, clay dam is in fact seriously endangered during periods when the lake is high and the wind is blowing strong. Repairs should be made at once and it is recommended that a reinforced concrete facing will probably be the most economical means of protecting the clay walls from the wave action of the water.

To properly protect the water supply not only should the recommendations previously made be carried out, but plans should be set on foot which will lead toward the construction of a filter plant in the near future. No matter how carefully a surface water supply is protected, times will occur when pollu-on will gain entrance. A filter plant constructed to guard against this condition is an economical health insurance for any city.

OAKLAND CITY.

August 16, 1916.

The water supply of the town of Oakland City is taken from an artificial lake which, when full to the spillway, has a capacity of approximately 73,000,000 gallons. The lake has a mud bottom and occasionally the water develops an unpleasant odor due to the heavy growths of moss, pond lilies and algal forms. At the time of the inspection, August 16, 1916, the water was especially objectionable on account of a very marked taste due probably to growths of some of the lower plant forms. The water works officials were advised that the surface of the lake would probably remove the objectionable taste. The growths of moss may be lessened by treating with copper sulphate. The inspection of the plant also indicated that greater care should be used in applying a more regular treatment of the "hypo" to the lake water.

WASHINGTON.

August 17, 1916.

The Washington Water Company, a private corporation supplies water for the public system of Washington, Indiana. The company obtains their supply from the West Fork of White River. The raw river water is settled in coagulating basins and filtered through gravity filters of the Norwood type. Distribution is obtained through approximately 20 miles of mains. The company supplies about 7,000 of the population of the city. In addition to supplying the city, water to the amount of 250,000 gallons daily is provided for the Baltimore and Ohio Railroad shops located west of the city.

Although the filter plant was enlarged in 1915, the rapid increase in consumption places a considerable burden on the plant during certain periods of the day. For this reason it is advisable that the fourth ½ million gallon unit of the plant be equipped before the beginning of another summer season.

For more efficient operation of the plant, it is recommended that certain changes and additions be made, to-wit:

(1) Loss of head gauges and efficient rate control valves should be installed.

(2) A more satisfactory distribution trough for coagulated water in filter No. 3 should be provided.

(3) A more satisfactory sterilization of the filtered water should be procured. This may be done by the installation of a liquid chlorine sterilization machine.

(4) The fourth filter unit should be equipped.

VINCENNES.

The public water system of Vincennes was established by the Vincennes Water Company in 1886. The raw river water was pumped into a standpipe by two Dean vertical, compound, condensing pumps of two million gallons capacity each. It flowed into the city mains by pressure.

Filtration was first established in 1898 by the installation of four Continental Jewell filters with a total capacity of two million gallons, and six wooden settling tanks of 50,000 gallons capacity each. These filters were replaced in 1906 by six concrete filters of 800,000 gallons capacity each.

During the year of 1914 improvements were made in the plant, a large concrete sedimentation basin, three additional filters, an additional clear well and chemical mixing and storage tanks were constructed. Additional pumping machinery was also installed. As it is now operated, the system is composed of two intakes extending into the Wabash River, two low service pumps for supplying raw water to the subsidence basin, sand filters, clear wells, high pressure pumps, a steam generating plant, a standpipe and a distribution system.

Two intakes into the Wabash River are provided, one of sixteen inches extending out into the river 235 feet from low water mark and the other, twenty inches in diameter, being 165 feet out at low water.

Originally the raw water was lifted to the sedimentation basins by two Wheeler compound, low service, condensing pumps of 3,000,000 gallons each. In 1914 there was installed a 6,000,000 gallon DeLaval turbine driven, centrifugal pump for the low lift work.

The newly constructed subsidence basin is a concrete structure 170 feet long by 70 feet wide by 10 feet deep with a baffle wall running length wise. The total capacity of the basin is 800,000 gallons, equivalent to 4.8 hours treatment on the basis of 4,000,000 gallons, the maximum daily consumption in Vincennes. By the aid of the concrete bafflle wall, the length of the flow through the basin is approximately 340 feet. Consequently the maximum velocity is 1.1 feet per minute when the plant is working at the 4,000,000 gallon rate. A solution of alum is injected into the raw water as it enters the coagulating basin.

The filters are constructed of reinforced concrete and are nine in number, each 16 by 17 feet and with a capacity of about 800,000 gallons each. The strainer systems consist of one and one-half inch galvanized iron pipe leading from a control manifold. The strainer heads are made of brass and screwed into the pipe. All of the drainage system except the strainer heads is buried in the concrete floor of the filter. The filterial material consists of 3½ feet of sand laid on 8 inches of gravel. The wash water is removed by means of an upward current of air and water.

Two clear wells are provided, an old one 13 feet deep and 50 feet in diameter, having a capacity of 200,000 gallons and a new one of reinforced concrete holding 300,000 gallons.

Four high pressure pumps are provided. These consist of two Dean vertical, compound, condensing pumps of 2,000,000 gallons capacity, installed in 1886; one Worthington, horizontal tandem type expansion pump of 3,500,000 gallons capacity installed in 1906, and a new Snow cross-compound condensing pump of 6,000,000 gallons capacity.

Chemical mixing and storage tanks are provided. Alum is applied to the raw water as it goes to the settling basin and "hypo" applied to the filtered water as it goes to the clear well.

A standpipe 22 feet in diameter and 200 feet high carries the city pressure during a portion of the night.

The average daily consumption is approximately 2.5 million gallons. About 10,000 people depend upon the city supply for domestic use or sprinkling.

TERRE HAUTE.

AUGUST 18, 1916.

The city of Terre Haute is supplied with filtered water obtained from the Wabash River as the source.

The raw water is pumped to a settling basin 230 feet long by 60 feet wide by 7 feet deep whenever it has a turbidity of 80 or higher. It is treated with alum and bleached. From the settling basin it is pumped into the pressure filters and directly into the city mains. The pressure filter system is comprised of 22 units. Twelve of these units were installed by the National Water Purifying Company. These filters are 10 feet in diameter and the shell is 7 feet in height. The total sand surface of the 12 filters is .0216 acres and the capacity at the rate of 150,000,000 per acre is 3,240,000 gallons in 24 hours. Ten horizontal filters each 8 by 20 feet with a total sand surface of .0321 acres have a capacity of 4,810,000 gallons per day.

The total filtering capacity of the plant is 8,050,000 gallons per 24 hours. During the last 5-year period 1911-1915, the average volume of water filtered daily was 4.81 million gallons. In comparing this figure with the plant capacity figure, 8.05 million gallons per day, it is seen that the plant has a very considerable reserve capacity over the daily output.

Previous to 1915, the Water Company used "hypo" treatment in addition to the purification by filtration. In that year a Jewell chlorine cell, which by electrolytic action generates chlorine gas from a salt solution, was installed. Since the original installation a cell of large capacity has been installed. By means of this installation, the company is able to treat the filtered water satisfactorily without causing the undersirable tastes which frequently accompany the use of hypochlorite.

The water company maintains a chemical and bacterial laboratory which very carefully checks the operation of the filter units. The figures compiled during the year indicate that a very satisfactory public supply has been furnished the city of Terre Haute. Typhoid fever statistics compiled by the Water Company indicate that while the average annual death rate per 100,000 from typhoid fever in the entire city for a 5 year period was 25.8, the rate for the same period among users of the public water supply was only 3.9 per 100,000.

The pumping machinery of the plant is as follows:

One Allis Chalmers Triple Vertical Engine	12,000,000
One Holly Double Compound Vertical Engine	6,000,000
One Rotary Pump with Corliss Engine	4,000,000
One Low Service Centrifugal Vertical Engine	6,000,000
One Clapp and Jones Vertical Engine	4,000,000

The city is supplied by direct pressure. A storage reservoir is used for the peak of the load and in case of emergency. Approximately 100 miles of city mains are installed and 1,149 fire hydrants are maintained. About 7,300 consumers are supplied with city water.

INVESTIGATION OF SANITARY CONDITION OF WHITE RIVER BETWEEN BROADRIPPLE AND WAVERLY, INDIANA.

Pursuant to an order from the Indiana State Board of Health requiring a survey of White River to determine the effect of the discharge of domestic sewage and factory waste into this stream at Indianapolis. Such a survey was made September 8, 1916, by J. C. Diggs and H. E. Bishop.

The survey was made by traversing the course of the stream in a boat from Riverside Park, Indianapolis to Waverly Park, Indiana. Samples were taken at intervals and observations made at various points along the stream. In addition to the work done from the boat, two observations were made, at Broadripple and at the Bridge near Crows Nest.

The samples were taken at the points described below.

1. Broadripple above dam. At this point the river is free from floating matter or objectionable odor. The banks are clean.

2. Crows Nest. Water is clear, free from floating matter. Banks are clean. No objectionable odor.

3. Riverside Park near Emricksville Bridge. The water is clean, but has a slightly weedy odor. Banks and surface clean.

4. Above West Washington Street Bridge, Indianapolis. The water is clear. At places the surface is slightly oily. Banks are clean.

Below Kingan's Packing Plant. On the surface is a black scum. The banks and bed of the stream are soiled with slime.

Bubbles of gas rise from the septic water. Pieces of floating tissue are in the water.

Below Van Camps pieces of tomatoes are on the surface of the water.

5. Below Morris Street floating slime is on the water, the odor is foul. Banks are coated with slime. Bubbles of gas rise to the surface.

6. Belt Railroad, 500 feet below mouth of Morris Street sewer. Excessive amounts of floating matter. Banks coated with slime.

7. Raymond Street. Excessive floating matter with slime on banks and bed of stream.

8. Pleasant Run Outlet. River covered with a black scum. Banks coated with slime.

9. Bridge at Sellers Farm. Water black and covered with scum.

10. Three quarters of a mile below Sellers Farm. Oil and grease in scum on surface of the water. Bubbles of gas from water.

11. One half mile below Maywood Creek. Surface slightly clearing. Oil on surface, but little scum.

12. Three quarters of a mile below Eagle Creek. River broad, fiat and quiet. Water clearing, slight scum. Bank coated with slime. Duck weed seen floating on surface.

13. One half mile below No. 12. River broad, flat, septic, Slime on banks and bed of stream.

14. One mile below No. 13. Odor and scum very noticeable. Water turbid and banks slimy.

15. One mile below No. 14. River septic. Scum on banks and bottom.

16. Covered Bridge. River Cleaner. Banks covered with slime and bottom covered with malodorous filth.

17. One mile below Covered Bridge. Surface clear. Slime on rocks and banks.

18. One mile above Johnson, Marion County line. Surface clear, slime on banks and rocks.

19. Johnson, Marion County line. Surface practically clear. Slime on rocks and banks, current swift. Bright green algae noted for the first time.

20. Two and one-half miles below Marion, Johnson County line. Water clear, Banks cleaner than formerly. Current swift.

21. Johnson, Morgan County line. Water clean. Banks and rocks less slimy.

22. Two miles below Johnson, Morgan County line. Water clean. Banks scarcely slimy. Floating filaments of algae.

23. Waverly Bridge. Water fairly clean. Little floating matter. Very little slime.

Summary of Observations.

Above the West Washington Street Bridge at Indianapolis, White River is practically normal. The surface was clean, save at a few points, some oil was floating. The water had no offensive odor. Fish were seen darting through the water or rising above the surface. Fishermen were on the banks.

From a point opposite Kingan's Packing Plant to the Marion County line the stream may be characterized as a malodorous, septic stream, bearing on its surface floating matter of sewage origin. The banks and rocks were covered with slime and filth. At certain points, viz. below the sewers of Kingan's Packing House, below Van Camps, at the mouths of the Morris Street and Harding Street sewers, the condition was infinitely worse. The stream was without normal plant growths of the lower forms and the trees along the banks were shunned by practically all types of birds which usually frequent streams.

In its course through Johnson County, the stream showed considerable improvement and in Morgan County as far as the eye was able to detect, the character of the water had returned to a normal condition. At these points however, it continues to give forth considerable odor and at some points a considerable deposit of filth was found on the bed of the stream.

From chemical analysis, it was found that samples taken from all points below the Washington Street Bridge were entirely devoid of dissolved oxygen making the existence of fish life impossible.

Bacteriologically the water below the city was of the same character as ordinary household sewage.

WHITE RIVER SAMPLES, SEPTEMBER 8, 1916.

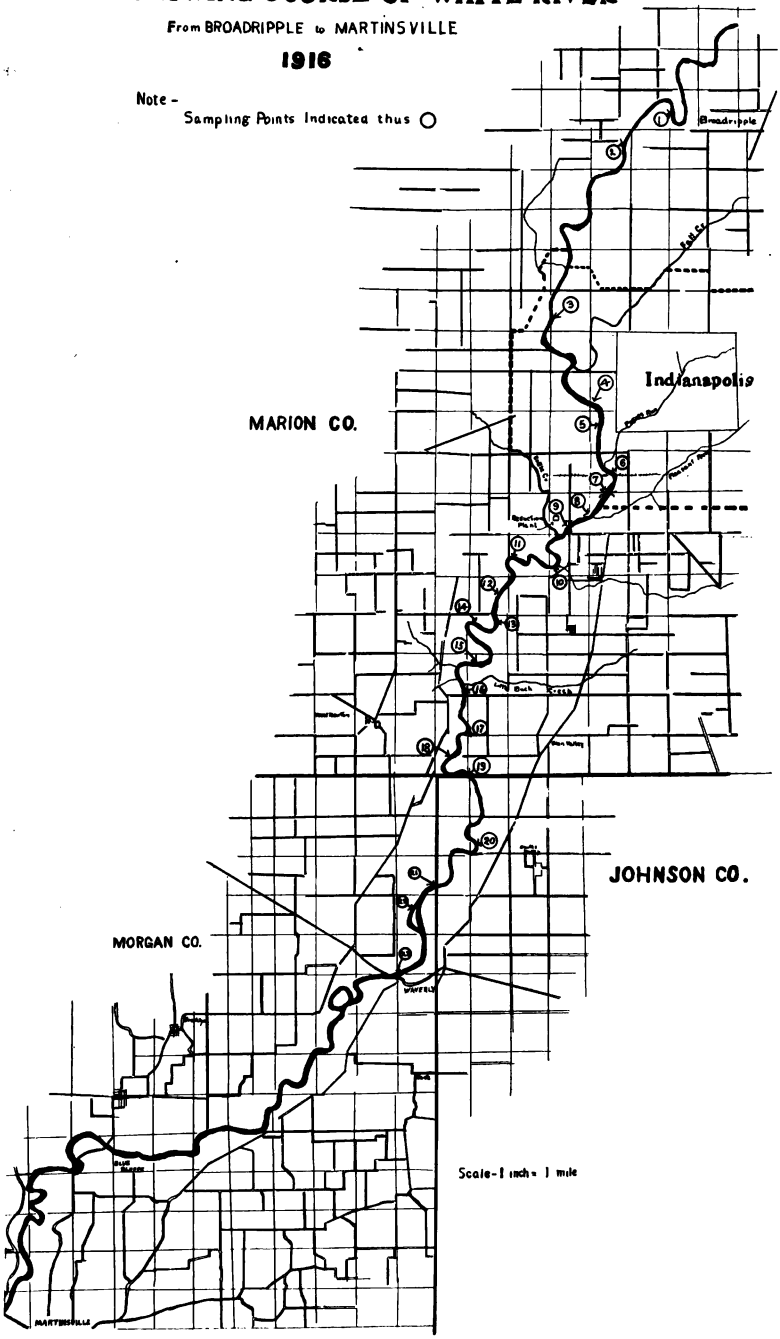
Lab. No.	Bacteria per cc 37°	Ammonia.	Nitrogen as		Chlorine	Oxygen-Consumed.	Dissolved Oxygen.	Percent. Saturation.
			NO_2	NO_3				
1	35	.0100	.0000	.0008	2.0	.482	.64	79
2	320	.0200	.0200	.0008	1.4	.284	.76	94
3	60	.0200	.0000	.0016	1.6	.460	.80	99
4	10,000	.0500	.0200	.0072	1.6	.442	.44	54
5	8,000	.0600	.0200	.0120	2.6	.476	.04	50
6	660,000	.3000	.0000	.0000	4.6	1.578	.00	0
7	400,000	.3000	.0000	.0000	4.4	.696	.00	0
8	700,000	.3000	.0000	.0000	4.4	.429	.00	0
9	900,000	.1000	.0000	.0000	4.6	.612	.00	0
10	800,000	.1000	.0000	.0000	4.8	.964	.00	0
11	250,000	.3000	.0000	.0000	4.4	2.114	.00	0
12	240,000	.3000	.0000	.0000	4.6	.960	.00	0
13	900,000	.4000	.0000	.0000	5.2	1.550	.00	0
14	400,000	.3000	.0000	.0000	5.4	1.285	.00	0
15	220,000	.4000	.0000	.0000	5.4	1.348	.00	0
16	120,000	.4000	.0000	.0000	5.2	1.352	.00	0
17	160,000	.5000	.0000	.0000	5.4	1.259	.00	0
18	160,000	.5000	.0000	.0000	5.0	1.436	.00	0
19	600,000	.5000	.0000	.0000	5.2	1.247	.00	0
20	198,000	.5000	.0000	.0000	4.4	1.218	.00	0
21	70,000	.3000	.0000	.0000	4.4	.847	.00	0
22	90,000	.3000	.0000	.0000	4.6	1.028	.00	0
23	125,000	.3000	.0000	.0000	5.0	.835	.00	0

MAP SHOWING COURSE OF WHITE RIVER

From BROADRIPPLE to MARTINSVILLE

1916

Note -
Sampling Points Indicated thus ○



A SANITARY SURVEY OF LAKE WAWASEE

by

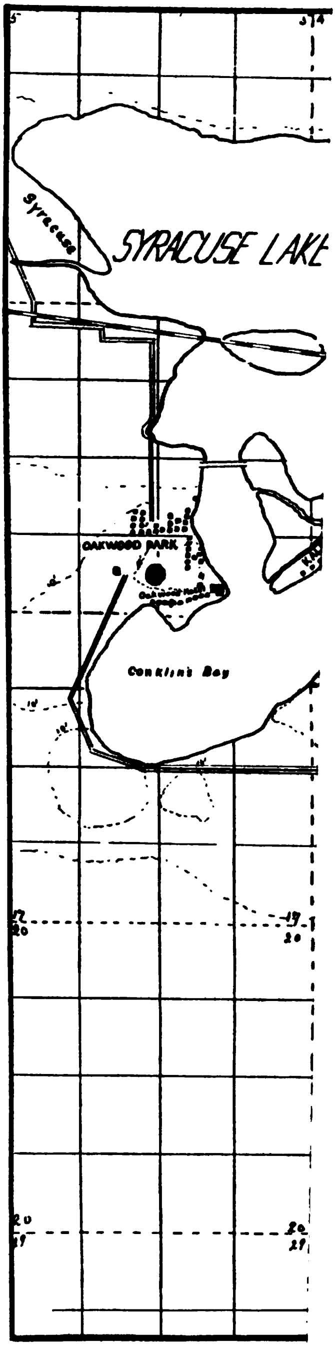
JOHN C. DIGGS, Sanitary Engineer.

With a Discussion of

VACATION TYPHOID FEVER.

by

DR. H. H. MITCHELL.


5
3 | 4
Syracuse
SYRACUSE LAKE
OAKWOOD PARK
Conklin's Bay
17
20
17
20
20
21
20
21

A SANITARY SURVEY OF LAKE WAWASEE.

JOHN C. DIGGS, Sanitary Engineer.

Lake Wawasee, situated in the northern portion of Kosciusko County, is the largest lake in the State. It is located on practically the summit of the continental divide; its waters passing into Lake Michigan which reaches the Atlantic through the St. Lawrence. Lakes located not five miles to the south drain into the Tippecanoe and Wabash Rivers and reach the Gulf of Mexico through the Mississippi. The lake, whose total area is 3,800 acres, is very irregular in shape, having a shore line of approximately 21 miles. The shores are equally divided between low marshy land and high bluffs with sandy shores. A large portion of the lake is shallow, more than one-half being less than 10 feet. At a few points the depth reaches 65 feet. The only tributary of any importance is Turkey Creek which enters the lake on the east side of Jarrett's Bay. During rainy seasons the overflow from Papakeechie Lake, an artificial body of water formed by the construction of a dam below a group of small lakes located at this point, reaches Lake Wawasee through a small branch.

A considerable part of the water supply of the lake is obtained from springs which feed in at the bottom. An idea of the hydrostatic pressure underneath the lake may be obtained by viewing the flowing wells at Buttermilk Point and Natty Crow Beach.

The water from the lake flows through a channel into Syracuse Lake and over a spillway into lower Turkey Creek through which it enters the Elkhart River near Goshen.

Wawasee Lake as well as many other Indiana lakes is underlain with deposits of marl. When the formation occurs in sufficient quantities in water of not too great a depth it is sought by cement manufacturers. On this account Conkling Bay has been dredged to obtain the marl deposits. At other portions of the lake where the shores are low and marshy, the vegetable growth are rapidly filling the lake.

Lake Wawasee, formerly known as Turkey Lake, is perhaps the oldest summer resort in the State. As long ago as 40 years, the lake was visited annually by fishermen from all parts of the state. At this time no cottages or hotels bordered the lake—the fisherman depending upon the farm house for lodging. As for fishing, Wawasee has always stood high. Its waters abound in bass, pickeral, croppies, blue gills and perch.

As a summer resort, Lake Wawasee is perhaps the most highly developed of any in the State. Many large hotels, with all the improvements and conveniences of the city, are on its shores. Summer houses of finest quality have been built by citizens of the state who enjoy this location for a season's rest. It is an ideal spot for hiding from the sultry, inervating atmospheres of our cities.

THE SURVEY.

The survey of Lake Wawasee was made at the request of the Wawasee Protective Association, an organization whose membership is made up of the several hotel and cottage owners and other persons who are interested in bringing about a betterment in conditions of all character at Lake Wawasee.

The survey at Wawasee devoted itself to three general lines of investigation. (1) A study of drinking water supplies, (2) a study of methods of sewage disposal and (3) a study of epidemics of typhoid fever or other diseases which have occurred at the lake during recent years and an investigation of the supposed causes of such epidemics.

The corps of men engaged in the investigation was made up of the Sanitary Engineer of the State Board of Health, the Epidemiologist of the same board and a chemist and bacteriologist. The work continued over a period of three weeks, beginning about May 15, 1916.

In carrying out the first two items of the survey, very careful sanitary inspections were made of each of the 275 cottages and hotels situated on the shores of the lake. It is unfortunate that the survey could not have been made later in the season for at such a time practically all cottages would have been occupied and all hotels caring for their full capacity of guests.

In the sanitary inspection notice was taken of the location of the source of water supply, in all cases, a well, in reference to the privy, cesspool, septic tank or other devices for the disposal of sewage, the character of the platform about the well and the drain which should remove any waste water from the immediate vicinity of the well. The inspection of sewage disposal devices noted not only the devices of such disposal but the danger of the filth eventually reaching the water of the lake as well as that of the drinking water supply of the occupants of the cottages or the hotels.

THE UNDERGROUND SUPPLY ABOUT LAKE WAWASEE.

The geological formations which underlie Lake Wawasee and the surrounding land are very effective in affording to the region not only a very plentiful, but also a very pure water. The surface soil in nearly all cases is a sandy loam which is underlain at various depths with one or more strata of very impervious clay or hard pan. In some sections, in addition to this hard pan there is a layer of marl, a formation which very perfectly protects the strata underneath.

Wells for drinking water are obtained by driving pipes through the impervious layers until a gravel formation of good water-bearing quality is reached. The wells about the lake average from 16 to 30 feet in depth, though, in exceptional cases, the Wawasee Inn and the J. K. Lilly cottage on the north shore, where they go to a depth of several hundred feet. A well of a depth of less than 30 feet is considered very shallow. At such a depth it is very easy for any surface washings to find their way through any broken surfaces of the protecting soil formation eventually reaching the vein of water which supplies the well.

Many wells were found without curbs, platform or drain to carry away waste water falling near the well. Such a condition invites pollution of the water supply.

SEWAGE DISPOSAL.

Various types of sewage disposal devices are found to be in use. Unfortunately, many of them had been constructed with an idea as to economy only. The old style privy vault or pit is a nuisance and must be replaced by a device which will not jeopardize the health of the occupants of the nearby cottages. The old style privy is a nuisance to the sense of smell and the sense of sight. It pollutes the soil, endangers the water supply and furnishes a breeding place for flies who carry the filth in the kitchen and dining room.

The cesspool is satisfactory for the house which has running water, providing it is located at a sufficient distance away from a water supply. The septic tank, if properly constructed, so as to care for the effluent by sub-irrigation, is a very good method of disposal.

Probably the best type of disposal device is the chemical closet. This device is free from all the objections of both the out-door privy and the septic tank. It does not require running water for operation.

In the sanitary inspections which were made at every residence, the point of most vital concern was to determine the relation between the sewage and garbage wastes and the water supply.

Such matters as the disposal of dish waters and garbage and the general cleanliness of the back yard, directly or indirectly affect, not only the health of the family living in the home, but also that of the neighbors. Exclusive of the water supply, flies are probably the most active agents for transmitting typhoid fever and other intestinal diseases—especially summer complaint among children. A pile of garbage or manure, or a back yard made filthy by dish water and scraps from the kitchen, affords an excellent breeding place for flies which later carry filth and disease germs from privy to dining room or from the sick room to the baby's cradle.

An arbitrary classification of privies was made for the inspection—following the general method used by the U. S. Public Health Service in its typhoid investigations. The classification is as follows:

Class A. A privy with water-tight vault, thoroughly closed, and screened against flies.

Class B. Water-tight vault and closed, openings not screened.

Class C. Planked vault, closed rear but not water-tight.

Class D. No vault closed against chickens and small animals.

Class E. No vault, rear open, accessible to animals.

Obviously, it is difficult to classify some outhouses. It is often impossible to determine whether or not the vault had a water-tight bottom. As a matter of fact, most of the vaults were not water-tight, the owner depending upon the absorption by the soil to remove at least the liquid waste.

In some cases privies were found where vaults were overflowing, with the rear of the building entirely rotted away or broken through. Such an outhouse was placed in Class "E" for the obvious reason that it is as great a menace to public health as if constructed without a vault. (See table at end of report.)

HOTELS AT LAKE WAWASEE.

The Wawasee Inn, located on a high bluff on the north shore of Lake Wawasee, is the largest hotel on the lake. The hotel is very pleasantly situated in the middle of a grove of large trees.

Drinking water for the hotel is supplied from a 380 foot and a 280 foot well. The water for bath and toilets is supplied by the private water plant of the Hotel, through an intake extending some distance into the lake. The sewage of the hotel is adequately cared for by septic tanks whose effluents pass into cesspools.

Vawter Park Hotel, is situated at Vawter Park, a colony located on the high ground on the south shore of the lake. The drinking water supply for the hotel is obtained from two wells of approximately 40 feet in depth. Water for bathing and other household uses is obtained from this lake. Hotel sewage is disposed of by means of cesspools.

Lake View Hotel, is situated at a point formerly known as Black Stump Point. Drinking water is obtained from a driven well. No modern sewage system is in use.

Oakwood Hotel, located at Oakwood Park, is supplied with water by a private water system of the Park. The source of supply is a 30 foot driven well. The sewage of the hotel is cared for by a septic tank, the effluent passing into the marsh.

Jones' Hotel, is a hotel of 20 rooms. Water is obtained from two wells, one 35 feet and the other 53 feet in depth. At the time of the inspection, a septic tank for caring for sewage was being constructed.

Sargent's Hotel, with 12 guest rooms, is operated by Mr. and Mrs. J. M. Sargent. The hotel is thoroughly modern in every particular. The water is obtained from a 30 foot driven well. The sewage is very efficiently cared for by a modern septic tank, the effluent from this tank is disposed of by sub-irrigation.

Brunjes' Hotel, is located at the southwest end of the lake. Water is obtained from two 30 foot driven wells. No system for caring for the sewage in a sanitary manner was in use at the time of the inspection.

Ditton's Hotel, the water is obtained from driven wells. No modern type of sewage disposal was in use at the time of the inspection.

Crows Nest, located on a high bluff at the east end of the lake is a modern, commodious farm house operated as a hotel. The water supply is obtained from a spring. The supply is lifted to a tank located in the house by means of a hydraulic ram. Wastes from the house flow through a drain to the small sewage disposal plant.

CONDITION OF THE WATER OF LAKE WAWASEE.

Lake Wawasee exists in practically a pure state. During the entire inspection no evidence was found which pointed to any real serious pollution. Naturally a lake in a settled agricultural section receives the washing from land which has been fertilized by barnyard manure. Lake Wawasee also receives the washings from the yards of the cottages. This is certain to amount to an appreciable pollution, no matter how careful the occupant of the cottage may have been regarding matters of sanitation. During the summer season a certain amount of filth is carried into the lake by bathers. Such pollution, although very minor and never likely to cause a nuisance, prohibits the use of the lake water, unless purified, as a source of drinking water supply.

Bacteriological examination of samples taken from various points in the lake showed that the quality of the water was very excellent as a surface water. The abundance of fish life in the lake further evidenced the purity of the water.

GENERAL CONDITION OF WATER SUPPLIES AND SANITATION.

Chemical and bacteriological examinations were made of as many water supplies as it was possible to obtain samples. Most of these samples were satisfactory. Those showing evidence of pollution were ordered closed.

The most serious problem which confronts Lake Wawasee is that of sewage disposal. There is a tendency on the part of many of the owners of the cottages at this resort, as well as at all other similar resorts, to look up their abode at the lake as very temporary and not worthy of the expense of installing proper devices for disposal of the household wastes in a sanitary manner. Such an idea is a very serious mistake. Most persons go to the lake to rest and, perhaps to regain the health which they have lost by being too closely confined to the city. Sunshine and fresh air will do much to produce the desired result in the tired business man or under-exercised child, but it is not wise or reasonable to expect to build up a weakened human system under unfavorable conditions.

There are many privy vaults at Lake Wawasee which are a menace to a whole colony of cottages. They should be entirely done away with and substituted by a device which will prohibit the wastes from a convalescent typhoid patient being carried by flies or water to other individuals occupying nearby cottages.

Once the sewage problem is solved the matter of water supply will largely take care of itself. Certainly it is necessary to take common sense precautions; to see that dirty waste water is not permitted to fall on the ground near the well, and to see that garbage and dish water is not placed where it may come in contact with the water used for drinking purposes.

A well should be placed on ground that is a little higher than the surrounding surface and the waste water should be drained away.

VACATION TYPHOID FEVER AND LAKE WAWASEE.

Dr. H. H. Mitchell.

The lack of sanitation at summer resorts, even under conditions where the need is as great as in our cities, makes vacation typhoid a serious and specific danger to the vacationist. Our city dwellers demand sanitation in the city, but the indifference with which these same persons regard conditions of potential danger at their vacation playground is one of the paradoxes of human nature. But an epidemic at a summer resort quickly gives rise to such a wave of fear that several years are necessary for business to recover. Such an epidemic, that demanded the attention of the State Board of Health, occurred at one of the resorts located at Lake Wawasee during the summer of 1915. This fear of Lake Wawasee was augmented by various newspaper reports in the surrounding cities.

The effect of such an epidemic upon a summer resort is so disastrous that good business cannot afford to take chances with unsanitary conditions that may invite typhoid fever. The sanitation at Lake Wawasee was no worse than at many other summer resorts in Indiana where they have been more fortunate. Where the conditions are possible for the ready spread of typhoid, the advent of the infection is all that is necessary for an epidemic.

The findings as shown in the report made to the State Board (1915 Annual Report) would indicate that a typhoid carrier rather than the sanitary aspect of the surroundings was responsible for the typhoid fever at Lake Wawasee in 1915. However, it is very probable that several unsanitary features about the Vawter Park Hotel at Lake Wawasee played a large part in the disastrous results of this epidemic.

The finding of a typhoid carrier makes a pretty poor argument for improved sanitation. Carriers are recognized, before the danger is done, with such rareness and difficulty, that an epidemic of typhoid from a carrier handling food at the present status of our public health situation is regarded more as an unfortunate coincidence than inefficient public administration. Our laws in regard to the control of food handlers are adequate for the prevention of carriers but the problem of the complete administration of this law is not within the control of our officials at the present stage of public education and sentiment. But an epidemic of typhoid is signal enough for the correction of all conditions which allow typhoid to spread, for it is under the stress of a realization of the danger from the disease that the layman will make the greatest effort for good sanitation.

The presence at the Vawter Park Hotel of an open privy used by the kitchen help, an overflowing cesspool and the use of lake water for bathing, brushing the teeth by the guests, for washing dishes, rinsing drinking glasses and for washing the vegetables and salads made conditions at this hotel which invited the spread of typhoid aside from the usual methods by which a carrier in the kitchen and dining room may infect the food. The report of the survey made in 1916 shows many other conditions about the lake which would allow a ready spread of typhoid through a similar use of contaminated lake water, through flies from open privies and through pollution of wells from unsanitary disposal of sewage.

The facts that these conditions have not produced typhoid is a matter of good fortune and a mere coincidence that no infected person has appeared to supply the infection.

The recent history of typhoid at Lake Wawasee is confined entirely to an epidemic occurring in the summer of 1915 with the Vawter Park Hotel as the prominent and common factor in all persons having the disease following a visit at the lake. Fourteen cases of typhoid were reported who were at Vawter Park Hotel on or about July 25. Dr. Will Shimer, Superintendent of the State Laboratory investigated this epidemic during the latter part of August. His report appeared in the Tenth Annual Report of the Bacteriological Laboratory. A thorough inquiry from various sources around the lake was made with the purpose of learning of all possible history of typhoid about the lake or vicinity. No trace of any other cases of typhoid was found except those described by Dr. Shimer and four persons at the Vawter Park Hotel in the autumn of 1914, which included the proprietor and his wife. These cases probably came from a woman, Mrs. D., who came to work in the hotel the latter part of September, and came down with typhoid within eight days from the time of her arrival.

In view of the fact that thousands of people visit Lake Wawasee every summer, that the conditions at various points are as described elsewhere in this report, and that the probability for persons going to a summer resort for a rest of having a typhoid infection, either a mild case or a convalescent, seems somewhat greater than the normal population of a city or town, we think it remarkable that a history of more typhoid could not be traced to the sanitation around Lake Wawasee than the Vawter Park epidemic of the summer of 1915 and the four cases at the Vawter Park Hotel in the autumn of 1914.

SANITARY SURVEY OF LAKE WAWASEE RESORTS.

TABULATION SHOWING COTTAGE OWNERS AND REPORT ON SANITARY CONDITIONS.

Insp. No.	Location.	Owner.	Owner's Address.	Condition of Water Supply.	Sewage Disposal.		*Remarks.
					Device.	Condition.	
1	Kale Island	W. Colwell	Syracuse		Privy	C	
2	Kale Island	S. C. Leeper	Syracuse		Privy	C	
3	Kale Island	J. H. Weaver	Elkhart		Privy	C	
4	Kale Island	Jas. Roberts	Syracuse		Privy	C	
5	Kale Island	Mr. Clayton	Garrett		Privy	C	
6	Kale Island	W. Lavering	Syracuse		Privy	C	
7	Kale Island	W. Whitton	Milford	Bad	Privy	C	
8	Kale Island	S. J. Snavely	Elkhart		Privy	C	
9	Kale Island	S. J. Snavely	Elkhart		Privy	C	
10	Kale Island	G. C. Clark	Chicago, Ill		Privy	C	
11	Kale Island	J. S. Brown	Nappanee		Privy	C	
12	Kale Island	———Inks	Nappanee		Privy	C	
13	Kale Island	T. Walters	Bremen		Privy	C	
14	Kale Island	Mrs. J. Hagers	Goshen		Privy	C	
15	Kale Island	F. Kidder	Goshen		Privy	C	
16	Kale Island	B. Bausman	Milford		Privy	C	
17	Pickwick Park	Dillman Rickert	Nappanee		Privy	C	
18	Pickwick Park	J. Obers	South Bend		Privy	C	
19	Pickwick Park	L. R. Miles	Milford	Bad	Privy	C	
20	Pickwick Park	H. Egbert	Goshen	Good	Privy	C	
21	Pickwick Park	J. Egbert	Goshen		Cesspool		
22	Pickwick Park	C. M. Kleder	Marion		Privy	B	
23	Pickwick Park	Mrs. D. Zook	Nappanee		Cesspool		
24	Pickwick Park	F. Coppes	Nappanee		Cesspool		
25	Pickwick Park	J. D. Coppes	Nappanee		Cesspool		
26	Pickwick Park				Cesspool		
27	Pickwick Park	F. Abbott, Jr	Goshen		Privy	C	
28	Pickwick Park	C. R. Stoop	Nappanee		Cesspool		
29	Pickwick Park	Geo. Lamb	Nappanee		Privy	C	
30	Willow Grove	J. McMahan	Syracuse		Privy	D	1
31	Willow Grove	I. A. Hoy	Garrett				
32	Willow Grove	R. E. Stout	Indianapolis		Privy	C	
33	Willow Grove	Chas. Cook	Goshen		Privy	C	
34	Willow Grove	A. Deahl	Goshen		Privy	C	
35	Willow Grove	E. E. Tiedman	Goshen		Privy	C	2
36	Willow Grove	J. Burkett	Goshen	Satisfactory	Privy	C	2
37	Willow Grove	W. Whittaker	Goshen		Privy	C	2

See key at end of table.

38	Willow Grove	W. Whittaker	Goshen		Privy	D	2
39	Willow Grove	D. Hirschberger	Garrett	Satisfactory	Privy	C	2
40	Willow Grove	Wm. Miller	Garrett		Privy	C	2
41	Jones Landing	A. M. Jones	Syracuse		Hotel		
42	Jones Landing	A. M. Jones	Syracuse	Satisfactory	Privy	C	3
43	Jones Landing	A. M. Jones	Syracuse	Satisfactory	Privy	C	
44	Jones Landing	C. Cromwell	Goshen		Privy	C	
45	Jones Landing	Lewis Bartholomew	Goshen		Privy	C	
46	Jones Landing	C. A. Cook	Goshen		Privy	C	
47	Jones Landing	E. E. Mumment	Goshen		Privy	C	
48	Jones Landing	H. H. Rosse	Fort Wayne		Privy	C	
49	Jones Landing	J. Tedrowe	Indianapolis		Privy	B	
50	Jones Landing	F. Hubbel	Goshen		Privy	A	
51	Jones Landing	F. Derby	Goshen		Privy		
52	Jones Landing	C. Newell	Goshen		Privy	C	
53	Jones Landing	F. T. Hendry	Detroit, Michigan	Satisfactory	Privy	B	
54	Jones Landing	M. Ott	Benton		Privy	C	
55	Jones Landing	Sarah Butler	Benton		Privy	C	
56	Jones Landing	Sarah Butler	Benton		Privy	C	
57	Jones Landing	E. Vatet	Muncie		Cesspool		
58	Jones Landing	G. Alderman	Goshen		Privy	C	
59	Jones Landing	L. S. Ganter	Muncie		Privy	C	
60	Jones Landing	Jennie Baker	Garrett		Privy	C	
61	Jones Landing	Dr. W. H. Baker	South Bend	Satisfactory	Privy	C	
62	Jones Landing	R. McGee	Fort Wayne		Privy	C	
63	Jones Landing	Dr. Bulson	Fort Wayne		Septic Tank		
64	Jones Landing	F. E. Stouder	Fort Wayne		Cesspool		
65	Jones Landing	E. Newell	Goshen		Privy	C	
66	Jones Landing	C. E. Gorham	Goshen		Septic Tank		
67	Jones Landing	A. M. Jones	Syracuse		Privy	C	1
68	Jones Landing	P. Vananda	Garrett		Privy	D	1
69	Wawasee	C. E. Bishop	Wawasee	Satisfactory	Privy	D	4
70	Wawasee	Sargent's Hotel	Wawasee	Satisfactory	Privy	B	4
71	Wawasee	J. K. Lilly	Indianapolis	Satisfactory	Septic Tank		
72	Wawasee	Wawasee Inn	Wawasee	Satisfactory	Cesspool	C	4
73	Wawasee	Wawasee Inn	Wawasee	Satisfactory	Cesspool	C	4
74	Wawasee	Roy Riddles	Wawasee	Satisfactory	Privy	C	
75	Wawasee	E. Durand	Chicago, Illinois				
76	Ogden Island	J. Kunkeman	Ligonier		Privy	C	
77	Ogden Island	Wm. Inks	Ligonier		Privy	C	
78	Ogden Island	F. Botherwell	Ligonier		Privy	C	
79	Ogden Island	Mrs. Patterson	Wolf Lake	Satisfactory	Privy	C	
80	Ogden Island	W. S. Kiser	Cromwell	Satisfactory	Privy	C	
81	Ogden Island	Chas. Nelson	Ligonier		Privy	C	
82	Ogden Island	Dr. J. W. Morr	Albion				
83	Ogden Island	Albion Club	Albion		Privy	B	
84	Ogden Island	Dan Rench	Ligonier	Satisfactory	Privy	C	
85	Ogden Island	Wm. Grumpp	Muncie		Privy	D	1

SANITARY SURVEY OF LAKE WAWASEE RESORTS.

TABULATION SHOWING COTTAGE OWNERS AND REPORT ON SANITARY CONDITIONS.—Continued.

Insp. No.	Location.	Owner.	Owner's Address.	Condition of Water Supply.	Sewage Dispos a		Remarks.
					Device.	Condition.	
86	Cedar Point	J. E. D. Crow	Syracuse		Privy	C	
87	Cedar Point	E. N. Flick	Syracuse		Privy	C	
88	Cedar Point	Wm. Crow	Syracuse	Satisfactory	Privy	A	
89	Cedar Point	C. M. Sloane	Cromwell		Privy	D	1
90	Cedar Point	F. C. Clemer	Hicksville, Ohio	Satisfactory	Privy	C	
91	Cedar Point	———Buck	Fort Wayne		Privy	C	
92	Cedar Point	Frank Grier	Fort Wayne		Privy	C	
93	Cedar Point	M. G. Beaver	Fort Wayne		Privy	C	
94	Cedar Point	S. Dowell	Topeka		Privy	C	
95	Cedar Point	G. Durfee	Fort Wayne		Privy	C	
96	Cedar Point	J. A. Craig	Fort Wayne	Satisfactory	Privy	B	
97	Cedar Point	T. Smook	Fort Wayne		Privy	D	2
98	Waveland Beach	A. W. Johnson	Indianapolis		Privy	C	
99	Waveland Beach	J. E. Rarick	Syracuse		Privy	D	1
100	Waveland Beach	J. E. Rarick	Syracuse	Satisfactory	Privy	C	
101	Waveland Beach	——Molinaux	Syracuse			D	1
102	Waveland Beach	E. W. Flickinger	Ossian, Michigan		Privy	D	1
103	Waveland Beach	E. W. Flickinger	Ossian, Michigan		Privy	D	1
104	Waveland Beach	Henry Doll	Syracuse	Bad	Privy	C	
105	Crows Nest	A. E. Fick	Syracuse	Satisfactory	Privy	D	1
106	Crows Nest	A. E. Fick	Syracuse	Satisfactory	Privy	D	
107	Crows Nest	A. E. Fick	Syracuse				5
108	Crows Nest	A. E. Fick	Syracuse	Satisfactory	Privy	E	
109	Natty Crow Beach	J. E. McDonald	Ligonier	Satisfactory	Privy	C	
110	Natty Crow Beach	I. Baum	Ligonier		Privy	C	
111	Natty Crow Beach	C. Schlotterback	Ligonier		Privy	C	
112	Natty Crow Beach	J. Kinnison	Ligonier		Privy	C	
113	Natty Crow Beach	H. Inks	Ligonier	Satisfactory	Privy	D	1
114	Natty Crow Beach	F. Raubert	Ligonier		Privy	D	1
115	Natty Crow Beach	H. Spurgeon	Ligonier		Privy	D	1
116	Natty Crow Beach	W. S. Wise	Goshen		Privy	D	1
117	Natty Crow Beach	C. Simmons	Ligonier		Privy	D	1
118	Natty Crow Beach	J. H. Green	Ligonier		Privy	C	
119	Natty Crow Beach	O. Oldfather	Ligonier		Privy	C	
120	Natty Crow Beach	D. E. Scott	Indianapolis		Privy	D	1
121	Natty Crow Beach	J. D. Kreager	Ligonier		Privy	D	1
122	Natty Crow Beach	G. Sack	Ligonier		Privy	C	

123	Natty Crow Beach	F. P. Wood	Ligonier		Privy	C	
124	Natty Crow Beach	T. Younger	Greencastle		Privy	D	1
125	Natty Crow Beach	F. Vondersmith	South Bend		Privy	C	
126	Natty Crow Beach	Dr. A. Gants	Ligonier		Privy	D	1
127	Natty Crow Beach	I. Schlotterback	Ligonier		Privy	C	
128	Morrison Island	C. Gumppes	Fort Wayne		Privy	C	
129	Morrison Island	Jas. Smith	Ligonier		Privy	C	
130	Morrison Island	J. O'Hara	Bloomington		Privy	C	
131	Morrison Island	F. Eckhart	Fort Wayne		Privy	C	
132	Morrison Island	C. Schlotterback	Cromwell		Privy	C	
133	Morrison Island	E. Moore	Cromwell		Privy	C	
134	Morrison Island	P. W. Fair	Fort Wayne		Privy	C	
135	Morrison Island	M. Moore	Cromwell		Privy	C	
136	Morrison Island	C. Seymour	Cromwell		Privy	C	
137	Morrison Island	W. Shaffer	South Bend				
138	Morrison Island	G. Bailhe	Fort Wayne				
139	Morrison Island	Dr. Schultz	Fort Wayne	Satisfactory	Privy	C	
140	Buttermilk Point	C. E. Johnson	Syracuse	Satisfactory	Privy	C	5
141	Buttermilk Point	C. E. Johnson	Syracuse	Satisfactory	Privy	C	
142	Buttermilk Point	I. Klingman	Syracuse	Satisfactory	Privy	C	
143	Buttermilk Point	C. McClintick	Syracuse	Satisfactory	Privy	C	
144	Buttermilk Point	Wm. Rapp	Syracuse		Privy	C	
145	Buttermilk Point	R. Miller	Topeka		Privy	C	
146	Buttermilk Point	———Blitz	Syracuse	Satisfactory	Cesspool		
147	VawterPark	Nancy Sudlow	Syracuse		Privy	C	
148	Vawter Park	G. Millinger	Syracuse		Privy	C	
150	Vawter Park	Fred Grider	Syracuse		Privy	C	
151	Vawter Park	Victor Smith	Syracuse		Privy	F	1
152	Vawter Park	Nancy Sudlow	Syracuse		Privy	C	
153	Vawter Park	G. Zanders	Syracuse		Privy	C	
154	Vawter Park	Nancy Sudlow	Syracuse		Privy	C	
155	Vawter Park	Nancy Sudlow	Syracuse		Privy	C	
156	Vawter Park	Nancy Sudlow	Syracuse	Bad	Cesspool		
157	Vawter Park	J. H. White	Michigan City		Cesspool		
158	Vawter Park	J. H. White	Michigan City	Satisfactory	Cesspool		
159	Vawter Park	G. Quick	Indianapolis		Cesspool		
160	Vawter Park	W. H. Perrin	LaFayette		Cesspool		
161	Vawter Park	O. C. Dunn	Franklin		Privy	C	
162	Vawter Park	Mary Sweet	New Kingston, Pa		Privy	C	
163	Vawter Park	F. Remy	Indianapolis	Satisfactory	Cesspool		
164	Vawter Park	C. A. Rusoh	Indianapolis		Privy	C	
165	Vawter Park	H. Whitcomb	Clinton		Privy	C	
166	Vawter Park	R. A. Pentreth	Clinton		Privy	C	
167	Vawter Park	E. A. Hardin	Indianapolis		Privy	C	
168	Vawter Park	W. B. McCullough	Franklin		Privy	C	
169	Vawter Park	E. A. Miller	Franklin				
170	Vawter Park	F. C. Fargo	Indianapolis		Privy	C	
171	Vawter Park	Allen King	Wabash		Privy	C	

SANITARY SURVEY OF LAKE WAWASEE RESORTS.

TABULATION SHOWING COTTAGE OWNERS AND REPORT ON SANITARY CONDITIONS.—Continued.

Insp. No.	Location.	Owner.	Owner's Address.	Condition of Water Supply.	Sewage Disposal.		Remarks.
					Device.	Condition.	
172	Vawter Park	A. L. Stephenson	Wabash		Privy	C	
173	Vawter Park	C. D. Butler	Indianapolis		Privy	C	
174	Vawter Park	R. F. Lutz	Wabash		Privy	C	
175	Vawter Park	Mary A. Still	Wabash		Privy	C	
176	Vawter Park	S. E. Cowgill	Wabash		Privy	C	
177	Vawter Park	H. S. King	Wabash		Privy	C	
178	Vawter Park	C. Latchem	Wabash		Privy	C	
179	Vawter Park	Dr. O. O'Neil	Chicago, Illinois		Privy	C	
180	Vawter Park	Dr. O. O'Neil	Chicago, Illinois	Satisfactory	Privy	C	
181	Vawter Park	Vawter Park Hotel	Syracuse	Satisfactory	Privy	C	1
182	Vawter Park	L. Solt	Syracuse	Satisfactory	Privy	C	
183	Vawter Park	L. Solt	Syracuse	Bad			
184	Vawter Park	M. C. Honeywell	Wabash	Satisfactory	Privy	C	1
185	Vawter Park	R. S. Conrad	Kokomo	Satisfactory	Cesspool		
186	Vawter Park	Rose Heyn	Syracuse	Satisfactory	Privy	C	
187	Vawter Park	J. G. Brannum	Indianapolis	Satisfactory	Cesspool		
188	Vawter Park	W. S. Ellis	Anderson	Satisfactory	Privy	C	
189	Vawter Park	C. Miller	Anderson				
190	Vawter Park	——Renolds	Anderson				
191	Vawter Park	W. R. Parks	Chicago Illinois	Satisfactory	Privy	B	
192	Vawter Park	J. M. Shields	Seymour		Privy	B	
193	Vawter Park	Dr. Rogers	Fort Wayne		Privy	C	
194	Vawter Park	Will Dale	Goshen		Privy	C	
195	Vawter Park	C. Vawter	Cincinnati, Ohio		Privy	C	
196	Vawter Park	Jas. Gill	Whiting		Privy	C	
197	Vawter Park	J. H. Moore	Cincinnati, Ohio		Privy	B	
198	Vawter Park	E. Robinson	Syracuse		Privy	B	
199	Vawter Park	C. D. Murray	Syracuse	Satisfactory	Privy	C	4
200	Vawter Park	C. D. Murray	Syracuse	Satisfactory	Privy	C	
201	Vawter Park	J. A. VanOsdel	Anderson		Privy	C	
202	Vawter Park	J. C. Eberhardt	Mishawaka		Privy	B	
203	Vawter Park	M. L. White	Noblesville				
204	Vawter Park	Ada Redman	Syracuse		Privy	D	1
205	Vawter Park	C. H. Fitz	Syracuse		Privy	C	
206	South Park	C. A. Sudlow	Indianapolis		Privy	D	
207	South Park	F. E. Marsh	Syracuse		Privy	C	
208	South Park	John Vorhees	Syracuse		Privy	C	1

209	South Park	E. O. Langen	Indianapolis		Privy	D	1
210	South Park	T. F. Vaughn	Wabash	Satisfactory	Cesspool	D	1
211	South Park	W. J. Gronnert	Elkhart		Cesspool		
212	South Park	S. H. Witmer	Buffalo, N. Y	Satisfactory	Privy	B	
213	South Park	B. Walters	Wabash		Cesspool		
214	South Park	Rev. Seamans	Warsaw		Privy	C	
215	South Park	Dr. B. Frazier	Louisville, Ky		Privy	C	
216	South Park	Lake View Hotel	Syracuse	Satisfactory	Privy	D	4
217	South Park	Waco Pavillion	Syracuse		Privy	D	1
218	South Park	B. Hoopingarner	Syracuse	Satisfactory	Privy	C	
219	Goshen Landing	O. Woomer	Waterford Mills		Privy	C	
220	Goshen Landing	M. McChitock	Nappanee	Bad	Privy	C	
220	Goshen Landing	Wm. Torn	Syracuse				
221	Goshen Landing	Robert Burke	Marion	Satisfactory	Cesspool		
222	Goshen Landing	A. W. Striebay	Syracuse		Privy	C	
223	Goshen Landing	J. Heedner	Goshen	Bad	Privy	C	
224	Goshen Landing	H. Winters	Goshen		Privy	C	
225	Goshen Landing	W. Burkey	Goshen				
226	Goshen Landing	Sam Lewis	Goshen		Privy	C	
227	Goshen Landing	G. S. Cobb	New Paris	Satisfactory	Privy	C	1
228	Goshen Landing	L. H. Brakes	Goshen	Satisfactory	Privy	D	1
229	Goshen Landing	V. U. Young	Gary		Privy	C	
230	Goshen Landing	J. Phillips	Syracuse		Privy	D	1
231	Goshen Landing	D. H. Brunjes Annex	Syracuse	Bad	Cesspool	C	4
232	Goshen Landing	D. H. Brunjes	Syracuse	Satisfactory	Privy	C	
233	Goshen Landing	D. H. Brunjes	Syracuse	Satisfactory	Privy	C	
234	Goshen Landing	D. H. Brunjes	Syracuse	Satisfactory	Privy	C	
235	Goshen Landing	S. Freeman	Syracuse	Satisfactory	Cesspool		
236	Goshen Landing	G. B. Sprague	Fort Wayne		Privy	C	
237	Goshen Landing	J. P. Singrey	Kendallville	Satisfactory	Privy	C	
238	Goshen Landing	E. Jenge	Syracuse		Privy	C	
239	Goshen Landing	E. Jenge	Syracuse	Bad	Privy	C	
240	Goshen Landing	E. George	Syracuse		Privy	C	
241	Goshen Landing	E. George	Syracuse		Privy	D	1
242	Oakwood Park	P. W. Soltau	Syracuse	Satisfactory	Privy	D	4
243	Oakwood Park	P. W. Soltau	Syracuse	Satisfactory	Privy	D	
244	Oakwood Park	F. Landeman	Bremen	Bad	Cesspool		
245	Oakwood Park	Rev. Newman	South Bend				
246	Oakwood Park	Rev. Mosier	South Bend				
247	Oakwood Park	———Fisher	Avilla				
248	Oakwood Park	———Hirst	Avilla		Cesspool		
249	Oakwood Park	C. L. Hartman	Indianapolis		Privy	C	
250	Oakwood Park	E. Ginrich	South Bend				
251	Oakwood Park	H. Weist	Mishawaka				
252	Oakwood Park	C. F. Hansing					
253	Oakwood Park	J. S. Hirschman	Indianapolis		Cesspool		
254	Oakwood Park	Wm. Roepkin	Dayton, Ohio				
255	Oakwood Park	C. E. Boyer	Naperville				

SANITARY SURVEY OF LAKE WAWASEE RESORTS.

TABULATION SHOWING COTTAGE OWNERS AND REPORT ON SANITARY CONDITIONS.—Continued.

Insp. No.	Location.	Owner.	Owner's Address.	Condition of Water Supply.	Sewage Disposal.		Remarks.
					Device.	Condition.	
256	Oakwood Park	E. J. Eberhardt	Indianapolis				
257	Oakwood Park	Mary Newman	Indianapolis				
258	Oakwood Park	C. Rohrer	New Paris				
259	Oakwood Park	W. H. Borkman	North Webster				
260	Oakwood Park	Rev. F. Hartman	South Bend				
261	Oakwood Park	Rev. Nepper	New Paris				
262	Oakwood Park	C. Rhodes	Bremen				
263	Oakwood Park	Rev. Bridges	Portland		Septic Tank		
264	Oakwood Park	C. Hettler	Fort Wayne		Cesspool		

*Key to "Remarks of Sanitary Condition of Cottages.

1. Privy in bad condition.
2. Privy built on marsh or channel. Lake pollution likely.
3. Septic tank to be rebuilt.
4. Order issued to remove privy.
5. Ordered to construct a sanitary privy.

THE VALPARAISO PUBLIC WATER SUPPLY.

JOHN C. DIGGS, Sanitary Engineer.

Usually the services of the Water Department of the Indiana State Board of Health are not requested until there is very good evidence for suspecting that a water supply is the cause of an epidemic of typhoid fever or similar disease or until bacteriolofical examinations have shown that the purification devices in a water filteration plant are not in efficient operation. The city of Valparaiso and the officials of the Home Water Company are to be highly commended because of their far-sightedness in their interest to have investigated a condition which might affect the quality of their public water supply and their desire to know the exact status of the sanitary conditions of the watershed from which their supply of drinking water is drawn.

Flint Lake from which this city takes its public supply is perhaps one of the cleanest bodies of water in Indiana used as a public water supply and for several years unusual precautions have been taken by both the city and water works officials to maintain the lake in a very high degree of purity. Their zeal in this matter is best illustrated by their action in requesting a sanitary survey and careful examination of additional watershed area recently acquired through the construction of a pipe line to a tract of land which naturally drains south into the Kankakee River. The petition from the Secretary of the Home Water Company in June 1916 asked that a sanitary survey be made of all the land which drains into Flint Lake and that bacteriological studies be made of the water of this land and of the efficiency of the water purification plant. This survey was conducted by the Sanitary Engineer of the State Board of Health, July 20 to 27, 1916, and included bacteriological studies made in the laboratory of the water works plant.

The Watershed.

The water supply of Valparaiso is taken from Flint Lake, the largest and lowest of a chain of six lakes lying in a flat but most arable basin which naturally drain through a branch into the Kankakee River. The basin is roughly two miles long by one mile wide and has a total area of 1,282 acres. A large part of the tract is quite low—much of it rising only a few feet above the water level. The elevation of Flint Lake, as determined by a topographic survey conducted by students from Valparaiso

University, is 791 feet. The highest elevation included in the watershed is 850 feet.

There occurs in the basin a chain of lakes varying in size from mere sink holes to Flint Lake and Long Lake which are approximately one half of a mile in length. Wahob Lake which lies at the upper end of this lake is remarkably clear and free from color in contrast to the other lakes of the basin. It receives very little water from marshy land, being evidently a kettle-hole in the thick bed of glacial drift which covers the entire northern portion of the state. Canada Lake, an area of a few acres, connected by a partially filled channel with Long Lake is the color of amber, the color evidently is due to the bog iron ore and leachings from beds of peat which underlie much of the swampy area. Long Lake is an elongated channel emptying into Flint Lake. Its greatest width is 80 rods.

Flint Lake occupies an area of approximately 100 acres. Although a large part of the lake is shallow water, the maximum depth is 70 feet. The average content of the lake is 370,000,000 gallons. Obviously, this entire volume of the water is not available for the power plant, but it does greatly assist as a storage basin for natural purification of the watershed runoff.

During recent years the precipitation during the winter months has been so light that the water level of Flint Lake has been dedicedly lowered. It is brought to its original level only after a period of considerable rainfall. A matter which has tended further to decrease the level of the water in Flint Lake during the dry months is the dam constructed between Long and Flint Lakes. The dam was made by filling up the channel between these two lakes and served a purpose of keeping Long Lake at practically its original level. By such construction Flint Lake was robbed of more than one-half of its watershed during the period when the water in Long Lake stood below the crest of the dam. To assure a plentiful supply of water in the future without lowering the level of Flint Lake to too great an extent, a pipe line was constructed which will bring into the lake the runoff from a tract of land which naturally drains into the Kakankee River. The new pipe line which at one point is laid at a depth of 25 feet is expected to care for the entire runoff from 700 acres of land. By this addition the total area of the watershed is approximately 2,000 acres. After deducting 500 acres which is occupied by water or swampy area, the remaining 1,500 acres should produce a runoff of at least 12 inches per year which would mean a daily flow of 1,400,000 gallons.

Since the completion of this investigation the local company has undertaken construction which will add to the water shed an area of some 300 acres of rolling wood-land bordering Spectacle Lake. This region which will have a run-off of 15 inches. Will bring the mean daily flow of the entire watershed to approximately 1,700,000 gallons.

The land which forms the watershed of Flint Lake is naturally an agricultural region and is subject to pollution only by the usual conditions obtaining about the farm yard. Naturally the washings from fields fertilized by barnyard manure eventually reach the lakes. This is equally true of any waste water from farm houses and leachings from cesspools and privies. Probably the danger from conditions is not great, but it must be taken into consideraton in the effort to produce a potable water supply.

There are located on the shores of Flint Lake four summer hotels and approximately seventy-five cottages. During this outing season each summer a large number of cottages about the shore are occupied by persons from Valparaiso, Chicago and other cities, the natural scenery, hills and forests surrounding the lakes offering a most inviting spot to those seeking out-door pastime and recreation. An interurban street railway line passing the shores of the lake makes direct connection with the cities of Gary, Hammond, East Chicago, LaPorte, Chesterton, and Valparaiso. With the large number of good hotels and dancing pavillions in addition to the bathing and fishing in the lake, the number of persons visiting the lake is rapidly increasing from year to year.

Very close inspection of the premises showed that the usual precautions have been taken by cottage owners in keeping the surroundings in a sanitary condition. At the best however, wherever people live in large numbers, the surface of the soil is certain to collect filth which inevitably will be washed into the lake.

Quality of the Water of Flint Lake.

The water of the chain of lakes which finds its way is impregnated with considerable coloring matter leached from the peat formations existing on the marshy shores. The water also, particularly at certain periods of the year, contains various agal forms which frequently give an objectionable taste or odor to the water. The fact that the impounded supply of Flint Lake is almost entirely derived from the runoff from a watershed which is free from limestone formation renders the water particularly suitable for household and industrial uses because of its exceptional softness.

Bacteriological examinations were made of samples taken from the various points in the several lakes of the basin. It is well to state however, that the results found are probably not representative of the condition during the greater part of the year for two reasons. First, July was an unusually dry month, the total precipitation for the entire month shown by the report of the Weather Bureau Station located at the water works pumping plant being .20 inches, most of which occurred on July 2nd. At the time of the survey, July 20 to 25, practically no water was flowing into the lake. Second, the latter part of July was unusually clear allowing an unusual purification of sunlight. Thus all factors were ideal for bringing about the maximum purification.

Fifty-one samples taken from Flint Lake were examined for total bacterial counts and gas forming organisms. The maximum count was 280 per cc and the minimum 3 per cc. (See Table No. 1.)

Gas formers were found present in a majority of the 1 cc plantings and in one-third of the .1 cc plantings.

All samples were taken from one foot below the surface and ordinarily about 100 to 150 feet from the shore, it being the belief if any serious pollution occurred it would be most pronounced near the shore.

In order to study the effect of the summer cottages and bathing on the quality of the water two series of samples were taken on July 24th and 25th. These two sets of samples were taken at about 5 o'clock in the morning, the water having been very quiet for a period of ten hours after having been used for several hundred bathers on the day previous. Bacterial examinations of these samples are shown in Table No. 1.

Table No. 2 shows the average bacterial content of samples collected at 20 points about the lake and the calculated number of gas forming organisms occurring at each point. This table indicated that the quality of the water near the bathing beaches is decidedly worse at other points, yet the contamination does not spread about the lake sufficiently to endanger the supply at the water works intake.

Bacterial samples taken from Long Lake, Wahob Lake and

Canada Lake showed that each of these lakes which were not used for bathing purposes to any appreciable extent and which were contaminated only by drainage from barnyards and land washing were in no way superior in quality to Flint Lake. The results are reported in Table No. 3.

At the time of the inspection practically no runoff was coming from the new watershed, making a checking of the effect of the water from this area impossible.

In so far as the sanitary condition of this tract was equal to that of the old watershed, it is believed that no danger will arise when this tract is actually supplying water to Flint Lake.

The condition of Flint Lake may be summarized as follows: The water is not seriously contaminated. Contamination from bathing at the beaches is limited to a small area of water. The pollution does not reach the water works intake.

Water Purification System.

The public water system of Valparaiso was constructed in the year 1885 by the Michigan Pipe Company of Bay City, Michigan, and is owned and operated by the Valparaiso Home Water Company which is composed of citizens of Valparaiso.

Until 1908 the untreated Flint Lake water was supplied to the city of Valparaiso. In that year as a precaution to remedy a possible contamination of the lake supply by bathers or drainage and to remove the very unpleasant odor occurring in the city supply as a result of the decomposition of algae and other plant forms naturally growing in the lake, a mechanical filteration plant was constructed. Since the original installation several important changes whose installation experience has shown to be advisable have been made. One of these was the installation of an agitation for assisting in washing filter beds. Chemical treatment of the filtered water by hypochlorite originally installed in 1910 was replaced by chlorine has in 1916.

The Pumping Station and Filteration Plant.

Water flows through Flint Lake into a suction well through two 12 inch intakes extending approximately 300 feet into the lake. From the suction well the raw water is lifted to the mixing chamber, where, discharging over a funnel about four feet above the water line and dropping freely through the air, it has an excellent opportunity for aeration in the fall. By this aeration, the algae odors are largely eliminated. From the mixing chamber the aerated and coagulated water passes into the settling basin and onto the filters. The filters are of the gravity type, three in number with a total capacity of 2,000,000 gallons. The filters as originally installed dependedupon the upward rise of the water through the strainer heads for cleaning the sand. In 1914 air wash was added to assist in breaking up the film of sediment formed on the sand bed. Below the filters is located the filtered water of 9½ to 11 inches per minute reservoir. The filtered water is treated with chlorine gas fed by a Wallace and Tierman manually operated machine.

The pumps used in operating the plant are as follows: Two Lawrence "Vortex" centrifugal, engine driven pumps interconnected so that either pump may be used in lifting raw water into the mixing chamber or in washing the dirty filter beds by forcing water up through the strainer system; one Gaskell-Holly horizontal crank and flywheel, non-compound, condensing pumping engine of capacity 1,500,000 gallons per day, installed in 1885; one Dean Holyoke, duplex plunger and ring type, capacity 1,000,000 gallons, installed in 1902 for emergency only; one Canton-Hughes, cross compound crank and flywheel type, capacity 2,000,000 gallons, installed in 1913.

Continuous pumping in past years lowered the level of Flint Lake to such a degree the company installed three deep wells near the pumping plant. Although resulting in much harder water than that obtained from the lake, the supply was cool, clear and potable.

It is believed that the new watershed will furnish such an abundant supply that future operation of the wells will not be necessary, thus not only decreasing the cost of operation but also supplying the public with a softer water than would be possible with the well in use.

Laboratory.

The Home Water Company maintains a chemical and bacteriological laboratory in connection with the water purification plant. Daily examinations of water for total bacterial content and presence of organisms of the Coli group are made.

The pumping and purification plant is operated at a very high efficiency from the view point of sanitation as well as that of economy.

Distribution System.

Water is carried to the city of Valparaiso through a 12 inch wooden pipe line. All of the city mains are of wood and although

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part of it has been in use for thirty years, no trouble has been experienced in leakage.

There is installed in all 24 miles of mains, 145 fire hydrants and 1,477 consumers taps. The average daily pumpage is 850,000 gallons per day.

Bacteriological Examination of Samples from the Purification Plant.

Samples were taken from the suction well, filter effluents and tap water which had been treated with chlorine gas, on four separate days. The results of this test which is shown on Table 4 indicates that the raw water supplied to the plant is in a very satisfactory condition showing normally no gas forming organisms on .1 cc samples, but on 1 cc samples approximately 40% of the time. The filtered and tap water at the time of the tests showed very low bacterial counts averaging 7 and 9 respectively and gas formers present usually in 10 cc portions but not in 1 cc plantings. Confirmatory tests indicated that many of the gas forming organisms found in the tap water did not belong to the typical Coli group. The result of the entire bacteriological tests of the plant indicate that the raw water supply of the Home Water Company is of good quality and that the purified water supplied to the city of Valparaiso is in excellent condition and entirely satisfactory for a public water supply.

Summary.

First. the water supply of Valparaiso is derived from Flint Lake which is supplied by the runoff from an agricultural area which in addition to the washings from barnyards and cultivated fields receives some pollution from summer resort cottages and bathing beaches.

Second, the sanitation of the summer resort colony is very very satisfactory and has very little deleterious affect upon the quality of the water, used by the purification plant.

Third, by the addition of the new watershed to Flint Lake the volume of the water flowing to the lake will be greatly increased and the level of the lake raised to its former height. By the increase storage the quality of the lake water will be improved.

Fourth, the purification plant of the Home Water Company is very efficiently equipped and operated and the purified water supplied to the city is of very satisfactory quality.

TABLE No. I.
SAMPLES FROM FLINT LAKE.

Sample No.	Date.	Source.	Bacterial Count Agar 37°C	Lactose Fermentation.		
				.1 cc.	1 cc.	10 cc.
9	7-20-16	Above Water Works Intake..	45	—	+	......
10		Opposite Price's Hotel......	35	—	+	......
11		Near Long Lake Inlet.......	11	—	+	......
12		West End.................	115	+	+	......
13		South West End...........	7	—	+	......
14		Opposite Jacob's Cottage....	150	—	+	......
15		New Watershed Inlet.......	150	—	+	......
16		Opposite Specht Drain......	12	—	—	......
17		Opposite Flint Lake Outlet..	280	—	+	......
25	7-22-16	Near Long Lake Inlet.......	12	—	+	......
26		West End.................	32	—	+	......
27		Southwest End............	30	—	—	......
28		Opposite Jacob's Cottage....	8	—	—	......
29		Opposite New Watershed....	55	—	—	......
30		Opposite Specht Drain......	3	—	+	......
31		Opposite Flint Lake Outlet..	46	—	+	......
32		Above Water Works Intake..	9	—	—	......
37	7-24-16	Foot of Lytle Ice Shute, 5 feet	32	—	+	......
38		Beach Inn, End of Pier, 7 feet	110	—	+	......
39		Sheridan Pavillion, 7 feet...	25	—	+	......
40		Sheridan Restaurant, 7 feet..	10	—	+	......
41		Sheridan Hotel, 6 feet.......	14	—	+	......
42		Midway-Sheridan Beach....	90	—	+	......
43		Andressen Cottage..........	17	—	—	......
44		Opposite Price's Hotel......	26	—	—	......
45		Opposite Sherwood Cottage..	65	—	—	......
46		Opposite Leslie's Cottage....	70	—	—	......
47		Opposite Long Lake Inlet....	17	—	—	......
48		West End.................	145	—	—	......
49		Southwest End............	35	—	—	......
50		Opp. New Watershed Inlet..	55	—	—	......
51		Opposite Specht's Pier......	22	+	+	......
52		Opposite Specht's Float.....	26	+	+	......
53		Opposite Flint Lake Outlet..	120	—	—	......
60	7-25-16	Foot Lytle Ice Shute........	43	+	+	......
61		Beach Inn.................	65	—	+	......
63		Sheridan Restaurant........	40	+	+	......
64		Sheridan Hotel.............	72	—	+	......
65		Midway, Sheridan-Beck's Cottage.................	15	+	+	......
66		Andressen.................	165	—	+	......
67		Opposite Price's Hotel......	15	+	+	......
68		Opposite Sherwood Cottage..	14	—	—	......
69		Opposite Leslie's Cottage....	7	—	+	......
70		Opposite Long Lake Inlet...	3	—	+	......
71		West End.................	60	—	+	......
72		South West End..........	95	+	+	......
73		Opp. New Watershed Inlet..	35	—	+	......
74		Opposite Specht's Pier......	32	+	+	......
75		Opposite Specht's Float.....	15	—	+	......
76		Flint Lake Outlet..........	26	—	+	......

BACTERIOLOGICAL EXAMINATION OF SAMPLES TAKEN FROM FLINT LAKE, JULY 20 to 25, 1916.

TABLE No. II.

Sampling Point.	Average Bacteria per cc Agar at 37°C.	Gas Forming Organisms per 100 cc Lactose	Remarks.
Foot of Lytle's Ice Shute...........	37	500	Bathing Beach.
Beach Inn, 100 feet from shore.......	87	100	
Sheridan Pavillion 100 feet from shore		500	
Sheridan Restaurant 100 feet from shore..........................	30	500	
Sheridan Hotel, 100 feet from shore	43	100	
Midway Sheridan Hotel and Beals Cottage..........................	57	500	
Andressen Cottage, 100 feet from shore..........................	90	100	
Price's Hotel, 100 feet from shore...	29	333	
Sherwood Cottage, 100 feet from shore..........................	40	00	
Leslie's Cottage, 100 feet from shore	38	50	
Long Lake Inlet, 100 feet from shore	11	75	
West End, 100 feet from shore.......	90	250	
Southwest End, 100 feet from shore.	29	250	
Jacob's Cottage, 100 feet from shore.	79	50	
New Watershed Inlet, 100 feet from shore..........................	74	50	
Specht's Drain, 100 feet from shore.	7	50	
Specht's Pier, 100 feet from shore...	27	1,000	Bathing Beach.
Specht's Float, 100 feet from shore..	20	500	
Outlet, 100 feet from shore.........	93	75	
Over Water Works Intake..........	27	50	

BACTERIOLOGICAL EXAMINATION OF SAMPLES FROM WAHOB LAKE, CANADA LAKE AND LONG LAKE.

TABLE No. III.

Samples No.	Date.	Source.	Bacteria per cc.	Lactrose Fermentation.		
				.1	1 cc.	10 cc.
1	7-20-16	Outlet, Wahob Lake	1	—	+	+
2		Center Wahob Lake	150	+	+	+
3		Near Pier, Wahob Lake.....	25	+	+	+
4		Center of Canada Lake.....	400	+	+	+
5		Outlet of Canada Lake......	250	+	+	+
6		Narrows of Long Lake......	96	+	+	+
7		Opposite Garden Inn Long Lake...................	425	+	+	+
8		North End, Long Lake......	120	+	+	+
22	7-22-16	North End, Long Lake......	230	+	+	......
23		Opposite Garden Inn Long Lake...................	46	+	+	......
24		Narrows of Long Lake......	230	—	+	......

BACTERIOLOGICAL EXAMINATION OF SAMPLES FROM THE WATER PURIFICATION PLANT OF VALPARAISO, INDIANA.

JULY 20-25, 1916.

TABLE No. IV.

Sample No.	Date.	Source.	Bacteria per cc Agar 37°C.	Gas Formation Lactose.			B. Coli Confirmation Endo Medium.
				1 cc.	1 cc.	10 cc.	
18	7–20–16	Raw Water....	102	—	— —	+	....
19	7–20–16	Filter No. 1....	7	—	— —	+	....
20	7–20–16	Filter No. 2....	7	—	+ —	+	—
21	7–20–16	Tap..........	5	—	— — +	+	—
33	7–22–16	Raw Water....	9	—	+	......	+
34	7–22–16	Filter No. 1....	8	—	—	+	+
35	7–22–16	Filter No. 3....	5	—	—	—	....
36	7–22–16	Tap..........	10	—	—	+	+
56	7–24–16	Raw Water....	30	—	—	+	....
57	7–24–16	Filter..........	7	......	—	+	....
58	7–24–16	Filter..........	7	......	—	+	....
59	7–24–16	Tap..........	9	......	—	+	....
77	7–25–16	Raw Water....	9	......	+	+	....
78	7–25–16	Filter No. 1....	15	......	......	—	....
79	7–25–16	Filter No. 3....	20	—	—	—	....
80	7–25–16	Tap..........	5	......	—	—	....

Average Bacteriological Condition as found by Examination on Four Days.

		Gas Formers per cc.
Raw Water....	37	.40
Filtered Water.	9	.11
Tap..........	7	.20

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